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BIBLIOGRAPHIES ON AEROSPACE SCIENCE

A CONTINUING BIBLIOGRAPHY

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

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BIBLIOGRAPHIES ON AEROSPACE SCIENCE

A CONTINUING BIBLIOGRAPHY

A selection of annotated references to unclassified bibliographies introduced into the NASA information system during the period January, 1962–May, 1964.



Scientific and Technical Information Division

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON, D. C. **AUGUST 1964**

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INTRODUCTION

With the publication of this first issue of the Continuing Bibliography on "Bibliographies on Aerospace Science" (SP-7006), the National Aeronautics and Space Administration expands its program of periodic distribution of selected references to subjects of interest to the aerospace community. The references are assembled in this form to provide a convenient source of information for use by scientists and engineers who need this type of specialized compilation. Continuing Bibliographies are to be updated periodically by supplements which can be appended to the original issue.

All references in SP-7006 are bibliographies that have been announced in either *Technical Publications Announcements* (TPA-Vol. 2 (1962)), or its successor, *Scientific and Technical Aerospace Reports* (STAR-Vol. 1 (1963) and Vol. 2 (Jan.-May, 1964)), or *International Aerospace Abstracts* (IAA-Vol. 3 (1963) and Vol. 4 (Jan.-May, 1964)). They were introduced into the NASA information system during the period January 1962 to May 1964. Produced by a variety of private institutions and governmental organizations, each one provides a listing of references to some aspect of aerospace science.

Each entry in the bibliography consists of a citation and, when available, an abstract. The listing of entries is arranged in two major groups. Report literature references are contained in the first group and are subdivided according to their date of announcement in TPA and STAR. The second group includes journal and book references subdivided according to date of announcement in IAA.

A subject index is also included.

AVAILABILITY OF DOCUMENTS

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IAA Series (A63, A64)

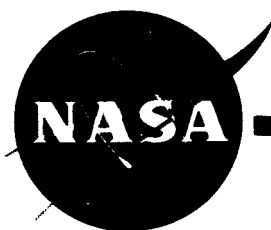
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Technical Information Service
American Institute of Aeronautics and Astronautics, Inc.
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For further details please consult the Introductions to STAR and IAA, respectively.

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BIBLIOGRAPHIES ON AEROSPACE SCIENCE

a continuing bibliography

AUGUST 1964

1962

TPA ENTRIES

N62-10066 Napolitano, Luigi G., and Giorgio Contursi, eds.
(Istituto di Aeronautica, Naples, Italy)

MAGNETO-FLUID-DYNAMICS; CURRENT PAPERS AND ABSTRACTS.
Enl. ed.

New York, Pergamon Press, 1962, xxi, 215 p. 2038 refs. Published for
Advisory Group for Aeronautical Research and Development, North
Atlantic Treaty Organization. (AGARD Bibliography I) \$10.00

This is a revised and enlarged second edition of a comprehensive
bibliography covering Magneto-Hydrodynamics relating to incompressible
fluids, Magneto-Gas-Dynamics relating to compressible fluids, the
particle approach to Plasma Physics, and laboratory, astrophysical,
geophysical, and thermonuclear applications.

N62-10135 Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena.
ASTRONAUTICS INFORMATION ORGANIC SEMICONDUCTORS:
PROPERTIES AND APPLICATIONS.

Comp. by Dorothy I. Sweitzer. Sept. 1961. 159 p. 805 refs.
(JPL Astronautics Information Search No. 341) (NASA Contract
NASw-6) Includes author index.

This literature-reference compilation, includes a number of entries
on conductive properties of organic materials, a few on applications
of such compounds, and several concerning synthesis. In addition to
the reference entries, abstracts of a great many of the references are
included. Text material is divided into five sections, followed by an
author index. The five sections are: conductivity and semiconductivity,
photoconductivity, excited states, dielectric effects, and applications.

N62-10153 Naval Research Lab., Washington, D. C.
THE USE OF HIGH-ALTITUDE ROCKETS FOR SCIENTIFIC INVESTIGATION:
AN ANNOTATED BIBLIOGRAPHY.

Mildred Benton. Oct. 1959, x, 123 p. 965 refs. (Bibl. No. 16)

Although earth satellites have proven useful for obtaining needed
data on the atmosphere, much important work can be done best by
sounding rockets. The development of rocket technology has enabled
scientists to pursue new paths of upper-atmosphere investigation by
enabling instruments to be carried directly into the stratosphere to be investigated. The technical reports and periodical literature annotated in this
bibliography delineate the growth and development of upper-
atmosphere investigation by means of rockets from the period 1946
through June 1959. Both domestic and foreign literature is included.

N62-10370 Allied Research Associates, Inc., Boston.
BIBLIOGRAPHY ON BIOSENSORS, A SAMPLING OF THE WORLD
LITERATURE, 1900-1961 (SECOND EDITION).

Comp. by J. Healer. Jan. 1962. 295 p. 2388 refs. (Document ARA-
1026) NASA Contract NASr-16) Supersedes Document ARA-985.
Available from OTS: \$18.50, mi \$9.05.

This bibliography represents the results of a world literature search
with particular emphasis on biosensor phenomenology. The format used
was derived from an IBM card code system chosen for ease in handling
and retrieval depending on the focus of interest of a particular user.
This compilation is alphabetical by author, but the cards from which it
was printed are available by special arrangement.

N62-10433 Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena.
ASTRONAUTICS INFORMATION. THERMIONIC AND THERMO-
ELECTRIC CONVERSION SYSTEMS.

Comp. by Edda Barber. Mar. 1962. 48 p. 292 refs. (JPL-AI/LS-392)
(NASA Contract NAS 7-100)

This annotated bibliography contains 292 references on thermionic
conversion systems, thermoelectric conversion systems, magnetohydro-
dynamic converters and general information on astronautics.

N62-10663 Army Chemical Research and Development Labs.,
Army Chemical Center, Md.
TENTH MATERIALS REVIEW.

Arthur Lyem. Nov. 1961. 97 p. 307 refs.
(CRDL-SP-4-32) (Proj. 4C93-30-001)

Over 300 articles have been abstracted from various journals.
The review covers: (1) high polymers, (2) plastic materials, (3) synthetic
fibers, and (4) metals and inorganic materials. (Author Abstract)

N62-10667 Naval Research Lab., Washington, D. C.
DIRECT ENERGY CONVERSION: LITERATURE ABSTRACTS.

Comp. by Mildred Benton. Sept. 1961. x, 208 p. 1080 refs.
OTS, \$3.50.

A collection of references from various sources covering the current
literature on thermoelectricity, thermionic emission, photoelectric pro-
cesses, energy storage, and energy sources. (Author Abstract)

N62-10854 Science and Tech. Div., Library of Congress, Washing-
ton, D. C.

AEROSPACE MEDICINE AND BIOLOGY (FORMERLY AVIATION
MEDICINE): AN ANNOTATED BIBLIOGRAPHY.

Vol. V. 1956 Literature.

Arnold J. Jacobius, Roman Kenk, Leroy D. Davis, Elizabeth G. Kaines,
Kristallo Pappajohn, and Ilga M. Plavnieks. 1962. vi, 378 p.
1493 refs.

(NASA Order R-34; RPO-805A, Project 7761; FAA Order 2-6776-1).
OTS: \$5.00.

This annotated bibliography on aerospace medicine and biology
covers literature published in 1956. The abstracts are arranged by
subject categories. A cumulative subject index is available for detailed
information on a specific subject. There is also an author index that in-
cludes secondary authors, and a corporate author index. (M.P.G.)

N62-10964 National Bureau of Standards, Boulder, Colo.
BIBLIOGRAPHY ON AURORAL RADIO WAVE PROPAGATION.
 Wilhelm Nupen. Jan. 12, 1962. xxx, 108 p. 297 refs.
 NBS Tech. Note 128, (PB-161629). Prepared by the American Meteorological Society (Meteorological and Geostrophysical Abstracts).
 OTS: \$2.75.

N62-11177 Mississippi State U., State College
ALGAL NUTRITION: A REVIEW OF THE LITERATURE.
 John H. Lancaster and Robert G. Tischer. Brooks AFB, Tex., School of Aerospace Medicine, Jan. 1962. 8 p. 66 refs.
 (Rept. No. 61-51)

All species of algae require the elements carbon, hydrogen, oxygen, nitrogen, and magnesium in fairly large amounts. All of the elemental nutrients are apparently best utilized as inorganic rather than organic substances. Carbon is best supplied as either the bicarbonate ion or as carbon dioxide. Nitrate or ammonium salts are the most efficient nitrogen sources. Oxygen is usually supplied in conjunction with the carbon source, while hydrogen is taken from the water in which the other nutrients are dissolved. Magnesium is most commonly added as the chloride or sulfate salt.

Requirements for potassium, iron, phosphorus, copper, zinc, boron, manganese, calcium, molybdenum, and sulfur have been demonstrated in various algae. Cobalt has been found to be associated with nitrogen metabolism in blue-greens. These elements, with the exception of potassium and sulfur, are required only in trace amounts.

In addition to these trace elements, certain others, including antimony, arsenic, tin, beryllium, germanium, iodine, lead, nickel, rubidium, tungsten, vanadium, silver, bismuth, and gold have been found in algal cells; but no essentiality or function has as yet been discovered for them. They are possibly absorbed through the ion exchange properties of acidic polysaccharides in the cells.

Trace elements are often supplied in sufficient amounts as impurities in macronutrients, water, and culture vessels. The availability of these elements may be increased through the addition of chelating agents which form soluble complexes with the metal ions, thereby converting them to a form utilizable by the algae.

The various nutrient substances, especially the trace elements, often support each other in their metabolic functions through interaction. One of these interactions occurs between calcium and manganese, in which calcium increases the manganese tolerance of the cells. A similar association is found between iron and manganese in some algae, with the iron serving to ward off manganese toxicity in the cell. (Author Abstract)

N62-11258 National Research Council of Canada. Radio and Electrical Engineering Div., Ottawa
ROCKET TELEMETRY AND SPACE ELECTRONICS: A BIBLIOGRAPHY.
 A. V. Aho. Sept. 1961. v, 84 p. 1079 refs.
 (ERB-592).

This bibliography is a compilation of recent papers in the fields of rocket and satellite telemetry and related fields of space electronics. Indexing is by author, title, and publication. Abstracts are not included. Most of the references are drawn from annual conferences and symposiums on telemetering. (M.P.G.)

N62-11260 Aeronics Lab., U. of Calif., Los Angeles.
A BIBLIOGRAPHY ON AERONICS.
 Alan Powell and T. J. B. Smith. Feb. 1962. 138 p. 2006 refs.
 (Rept. 62-4) (Contract Nonr 233(62))

This bibliography consists mainly of references to open literature relating to those sections of acoustics which are particularly associated with fluid motion and thermal action. Any bibliography such as this can only approach completeness in a narrow sense, since its scope must be limited in some way. The criterion of selection used here has primarily been one of relevance to the central subject area; consequently, a few items are included which are extremely relevant but display no direct acoustical connotations and, on the other hand, many aspects of acoustics which are not closely related to the areas of specialization have

in order to provide rapid location of information relating to any of eighteen subdivisions of the main subject; and it is hoped that this will greatly add to the convenience of the bibliography, which contains about two thousand entries. (Author Abstract)

N62-11347 National Bureau of Standards, Boulder, Colo.
BIBLIOGRAPHY ON METEORIC RADIO WAVE PROPAGATION.
 Wilhelm Nupen. May 29, 1961. 115 p. 368 refs.
 (PB-161595; NBS Tech. Note No. 94)
 Prepared by American Meteorological Society (Meteorological and Geostrophysical Abstracts)
 OTS: \$2.75.

N62-11353 Space Sciences Lab., General Electric Co., Philadelphia
AN ANNOTATED BIBLIOGRAPHY OF ARTICLES ON THE ATMOSPHERES OF VENUS AND MARS.
 L. Hobbs. Nov. 1961. 57 p. 103 refs.
 (R61SD175) (Contract AF 04(647)-476)

N62-11357 Naval School of Aviation Medicine, Pensacola, Fla.
BIBLIOGRAPHY: PSYCHOLOGICAL RESEARCH IN THE U. S. NAVAL SCHOOL OF AVIATION MEDICINE—JULY 1950-JUNE 1960.
 Richard E. Doll and James R. Berkshire. Feb. 6, 1961. 41 p. 493 refs. Includes author index.

N62-11358 Naval School of Aviation Medicine, Pensacola, Fla.
COMPREHENSIVE BIBLIOGRAPHY OF RESEARCH REPORTS ISSUED OVER A NINETEEN-YEAR PERIOD BY THE U. S. NAVAL SCHOOL OF AVIATION MEDICINE.
 Gilbert A. Daniel and Catherine F. Kasperek. May 1, 1961. iii, 74 p. 785 refs.
 (Rept. No. 3) (Bur. of Medicine and Surgery Proj. MR005.13-3001)
 Includes author index.

N62-11402 European Office of Aerospace Research, Brussels
SUPPLEMENT TO THE BIBLIOGRAPHY OF TECHNICAL NOTES AND TECHNICAL REPORTS.
 Jan. 1, 1962. 90 p. 486 refs.
 Covers period July 1-Dec. 31, 1961.

N62-11413 Plasma Physics Lab., Princeton U., N.J.
CUMULATIVE LISTING OF PLASMA PHYSICS LABORATORY REPORTS AND PUBLICATIONS. 3RD ED.
 Nov. 22, 1961. 32 p. 285 refs.
 (MATT-1, 3rd ed.) (Contract AT(30-1)-1238)
 Covers period July 1951-Nov. 1961.

N62-11417 Lockheed Missiles and Space Co., Sunnyvale, Calif.
ELECTRICAL CONTACTS IN SPACE ENVIRONMENT: AN ANNOTATED BIBLIOGRAPHY.
 Comp. by George E. Owens. May 1961. 84 p. 169 refs.
 (Spec. Bibliography SB-61-23; Rept. 3-77-61-1/SB-61-23)
 Includes author and subject indices.

This bibliography presents a survey of recent literature pertaining to electrical contacts in a space environment. It supports a laboratory investigation into the effects of strong ultraviolet radiation, hard vacuum (10^{-4} mm Hg or less), and low temperature (-50 to -200° F) upon moving electrical contacts operating at currents in the milliamperes-microampere range and at contact potentials up to a few millivolts. Because relatively little work in that environment has been reported, the bibliography includes references to work antecedent to the laboratory investigation, even though such work may not have been carried out within the specified range of conditions.

References are arranged alphabetically by personal author in three categories: Books; Reports; and Journal Articles. An index of secondary personal authors and corporate sources is provided, in addition to a subject index. (Author Abstract)

N62-11425 Bell Telephone Labs., Inc. Whippany, N.J.
NIKE-ZEUS GUIDED MISSILE SYSTEM: ABSTRACT CARDS FOR SEMIANNUAL PROGRESS REPORT, JAN. 1, 1961 TO JULY 1, 1961.
 [1961] [184] p.
 (Contract DA 30-069-ORD 1955)
 Each page consists of four catalog cards for each of the 91 reports produced on this contract

N62-11428 Lockheed Missiles and Space Co., Sunnyvale, Calif.
BIBLIOGRAPHY AND TECHNICAL REVIEW OF RUTILE (TiO₂).
Technical Report: Communications.
 Lewis E. Hollander, Jr., and Patricia L. Castro. Mar. 1961. v, 88p.
 259 refs.
 (LMSD-894803)
 Includes author index, p. 85-88.

Published work on rutile is cataloged and the state of the art is reviewed. The material includes crystal growth and preparation techniques; crystal structures; oxidation and reduction studies of the titanium-oxygen system; dielectric properties; electrical properties; resonance, maser, and microwave effects; and elastic moduli, films, and suboxides of titanium. Also, references to patents covering the uses of oxides of titanium for electronic applications are included. (I.v.L.)

N62-11429 Lockheed Missiles and Space Co., Sunnyvale, Calif.
PERSONNEL SUBSYSTEM TESTING AND EVALUATION FOR MISSILES AND SPACE SYSTEMS: AN ANNOTATED BIBLIOGRAPHY.
 Comp. by R. C. Gex. Apr. 1961. v, 102 p. 263 refs.
 (Special Bibliography SB-61-21; Rept. 3-36-61-1/SB-61-21)
 Includes subject index, p. 99-102.

The emphasis is on evaluation of performance of teams of personnel engaged in operating and maintaining complex man-machine systems. Training and training equipment, personnel requirements and human engineering studies were included if they contained information relevant to personnel evaluation. Sources checked include: ASTIA, IMSD reports catalog, AFBMD reports catalog, STL reports catalog, Air University Periodical Index, and Psychological Abstracts. Classified reports are included. The titles were taken from unclassified sources. Two hundred and fifty references are included, most of which contain abstracts. (Author Abstract)

N62-11511 Princeton U., N.J.
SUPPLEMENT "C": BIBLIOGRAPHY OF UNCLASSIFIED SQUID PUBLICATIONS, 1 JUNE 1959 TO 1 JUNE 1961.
 July 1961. 16 p. 42 refs.
 (Tech. Rept. PR-67-P-C) (Contract Nonr 1858(25), NR-098-038; Proj. SQUID)

N62-11997 Lockheed Missiles and Space Co., Sunnyvale, Calif.
PLASTIC PRESSURE TUBING AND FITTINGS: AN ANNOTATED BIBLIOGRAPHY.
 Comp. by Helen M. Abbott. Apr. 1961. 24 p. 72 refs.
 (Special Bibliography SB-61-15)

This bibliography contains selective references to aid in evaluating what type of plastic material could be used for tubing and fittings. The purpose of the search was to find availability, usage and application of plastic pressure tubing and fittings capable of withstanding 200 psi and temperatures of 200°F. The material was to be of a non-woven type, impervious to water and to have not less than a three-year lifetime. (Author Abstract)

N62-11998 Lockheed Missiles and Space Co., Sunnyvale, Calif.
ULTRAVIOLET AND VACUUM EFFECTS ON INORGANIC MATERIALS: AN ANNOTATED BIBLIOGRAPHY.
 Comp. by Robert C. Gex. Apr. 1961. 38 p. 73 refs.
 (Special Bibliography SB-61-19)
 Includes a Materials Index, p. 31-33.

A selected list is given of annotated references on the effects of vacuum and ultraviolet on inorganic materials. Primarily the effects reported in the literature are on the optical properties of inorganic films. (Author Abstract)

N62-12256 Advisory Group for Aeronautical Research and Development, Paris.
STATE OF THE ART OF ESTIMATION OF DERIVATIVES.
 H. H. B. M. Thomas. Apr. 1961. 65 p. 158 refs.
 (AGARD Rept. 339)

The methods at present available for the estimation of the usual longitudinal and lateral stability derivatives of an aircraft are briefly discussed for each derivative in turn. The general discussion of methods is followed by a detailed consideration of the estimation of these derivatives for a slender-wing type of aircraft, mainly at low speeds, when incidence effects are shown to be important. The growing importance of such higher-order aerodynamic derivatives poses the question whether the derivative approach is becoming inadequate. Possible alternative formulation of the aerodynamics is mentioned and briefly considered. (Author Abstract)

N62-12572 Du Pont de Nemours (E. I.) and Co. Savannah River Lab., Aiken, S.C.
STRESS-CORROSION CRACKING OF STAINLESS STEEL; A LITERATURE SEARCH.
 Myra S. Feldman. Feb. 1962. 69 p. 251 refs.
 (Contract AT(07-2)-1)
 (DP-683) OTS: \$1.50.

References on the stress-corrosion cracking of stainless steel have been abstracted from the open literature through September 1961. (Author Abstract)

N62-12589 Parke Mathematical Labs., Inc., Carlisle, Mass.
ANNOTATED BIBLIOGRAPHY ON ERROR CORRECTING CODES. Scientific Report No. 4.
 Dec. 1961. 115 p. 325 refs. Includes a topical index.
 (Contract AF 19(604)-7493)
 (AFRL-62-101)

This report presents some 350 titles of papers, reports, and books dealing with problems or tools of coding theory. Almost all entries are accompanied by a short abstract. (Author Abstract)

N62-12940 Atomic Energy Commission. Div. of Technical Information, Washington, D.C.
THERMOLUMINESCENCE—BIBLIOGRAPHY.
 Ernest E. Angino (Kansas U.) and N. Gröger (Physikalisches Inst., Bern U.). Mar. 22, 1962. 32 p. 382 refs.
 (TID-3911)

This bibliography of thermoluminescence was compiled as a research tool in the fields of phosphor chemistry, geochemistry, geochronology, geology, ceramics, physics and chemistry. Entries are classified by author, date, title and source. No abstracts are given. (M.P.G.)

N62-13061 Max-Planck-Institut für Biophysik, Frankfurt am Main (Germany).
EINWIRKUNG IONISIERENDER STRAHLEN AUF LEBENDES GEWEBE UND ORGANISMEN. Ausgewähltes Schrifttum Nach Sachgebieten; Bibliographische Zusammenstellung. INFLUENCE OF IONIZING RAYS ON LIVING TISSUE AND ORGANISMS. Selected Bibliography According to Subjects; Bibliographical Compilation.]
 W. Stahlhofen and B. Rajewsky, comps. Dec. 15, 1961. 209 p. 393 refs.
 (Atomkernenergie-Dokumentation beim Gmelin-Institut, Reihe C, Heft 04-4; AED-C-04-4)

This bibliography (nos. 1451-1843) covers conference papers, 1959-1961, on the influence of ionized radiation. The bibliography is indexed by report number, firm and institute, author, and subject. (J.L.F.)

N62-13062 Hahn-Meitner Inst. für Kernforschung, Berlin (Germany). **AKTIVIERUNGSANALYSE (ABGESCHLOSSEN AM 15. MAI 1961).** Ausgewähltes Schrifttum Nach Sachgebieten; Bibliographische Zusammenstellung. [ACTIVATION ANALYSES. (COMPLETED ON MAY 15, 1961.) Selected Bibliography According to Subjects; Bibliographic Compilation, Series C, Issue 14-1.]

W. Bock-Werthmann and W. Schulze, comps. Dec. 1, 1961. 261 p. 865 refs.

(Atomkernenergie-Dokumentation beim Gmelin-Institut, Reihe C, Heft 14-1; AED-C-14-1)

Part I of a selected bibliography, nos. 1-865, on gamma spectrometry, nuclear theory, neutron flux and sources, radiochemistry, etc. Indexed by report number, firm and institute, author, and subject: chemical elements and base materials. (J.L.F.)

N62-13211 Directorate of Materials and Processes, Aeronautical Systems Div., Wright-Patterson AFB, Ohio.

A REVIEW OF THE AIR FORCE MATERIALS RESEARCH AND DEVELOPMENT PROGRAM. [Interim] Technical Documentary Report [1 July 1960-30 June 1961].

Junie J. Banks and Donna J. Tate. Mar. 1962. 210 p. 312 refs. (WADC-TR-53-373, Suppl. 8)

These reports cover basic and applied research in the materials area being conducted by the Metals and Ceramics, Nonmetallic Materials, Physics, Manufacturing Technology, and Applications Laboratories of the Directorate of Materials and Processes. (Author Abstract)

N62-13249 Stanford Research Inst., Menlo Park, Calif.

A BIBLIOGRAPHY ON SOLUTIONS AND CRYSTAL GROWTH AT HIGH TEMPERATURES AND PRESSURES. Scientific Report No. 2. W. J. Silva, F. Craig, and W. J. Fredericks. May 9, 1962. 141 p. 2109 refs.

(Contract AF 19(604)-5697)
(AFCRL-62-332)

This report contains a bibliography of work related to the growth of crystals from solutions at high temperatures and pressures. References are organized into groups determined by the principal content of the paper. Each reference gives author, title, publication, and abstract reference. A cross index by the authors is provided. (Author Abstract)

N62-13301 Lawrence Radiation Lab., U. of Calif., Livermore, Calif. **FLUID MECHANICS AND HEAT TRANSFER FOR GASES (AIR, He, H₂, and N₂) FLOWING SINGLE PHASE IN CLOSED CHANNELS: BIBLIOGRAPHY.**

Rose Kraft. Feb. 21, 1962. 34 p. 284 refs.
(Contract W-7405-eng-48)
(UCRL-6807) OTS: \$0.75.

A bibliography is compiled on fluid mechanics and heat transfer for gases flowing single phase in closed channels. The arrangement of the references is alphabetical by author. A key to the abbreviations used to cite journal references is furnished, and the sources consulted are listed. (J.R.C.)

N62-13401 Massachusetts Inst. of Tech. Div. of Sponsored Research, Cambridge.

PROPERTIES AND REACTIONS OF HYDROGEN PEROXIDE. Final Report [Listing Research Reports of the Period 1945-1962].

Charles N. Satterfield. May 15, 1962. 13 p. 64 refs.
(Contract Nonr-1841(11) NR-092-008)

N62-13746 Federal Aviation Agency, Washington, D.C.

ECONOMIC ASPECTS OF THE SUPERSONIC TRANSPORT—SELECTED REFERENCES.

June 1962. 9 p. 91 refs.

(Its Bibliographic List no. 5)

This bibliography has been compiled for the purpose of bringing together a group of references on the economic aspects of the proposed supersonic transport aircraft, with the intention of providing the reader with views from both public and private sources on the advantages and disadvantages of using this aircraft in a commercial fleet. (Author Abstract)

N62-13880 Aerojet-General Corp., Azusa, Calif.

CRITERIA FOR PLASTIC ABLATION MATERIALS AS FUNCTIONS OF ENVIRONMENTAL PARAMETERS. PART II—ABLATION INFORMATION ABSTRACTS. [Final] Technical Documentary Report [Dec. 1960-June 1961].

V. M. Vila and D. Nilsson. Wright-Patterson AFB, Directorate of Materials and Processes, May 1962. 153 p. 243 refs. For Pt. I see N62-13949 02-11.

(Contract AF 33(616)-7401)

(ASD TR 61-439, Pt. II)

Reports presenting ablation information and related technology have been compiled and abstracted. Ablation information abstracts of the various reports with author, corporate, and subject indexes are presented. The abstracted reports presented are believed to represent 35 percent of the available literature on the subject of ablation and related technology. Abstracts of 243 reports are presented. (Author Abstract)

N62-13910 Atomic Energy Commission Div. of Technical Information, Washington, D.C.

GRAPHITE: A SELECTED BIBLIOGRAPHY.

Theodore F. Davis, comp. Feb. 1962. 171 p. 958 refs.
(TID-3314) OTS: \$2.75.

This compilation contains 958 references to report and published literature. The references pertain primarily to reactor grade graphite, although information on the manufacture and uses of graphite in other fields is included. The references were selected from *Nuclear Science Abstracts (NSA)*, covering the period 1948 through mid-1961. Subject, author, and availability indexes are provided. (Author Abstract)

N62-13993 Army Dept., Washington, D.C.

MISSILES AND VENTURES INTO SPACE PROGRESS REPORT, 1961-1962. [Bibliographic Survey.]

June 18, 1962. 114 p. 619 refs.

(Dept. of the Army Pamphlet 70-5-10)

This bibliography includes approximately 700 unclassified titles (partly abstracted and annotated) selected from periodicals, books, and studies that reflect the progress in missile science, rocket technology, and space exploration during the past year. (V.D.S.)

N62-14103 National Aeronautics and Space Administration, Washington, D.C.

LIST OF SELECTED REFERENCES ON NASA PROGRAMS.

Prepared ... by the Science and Technology Div. of the Library of Congress. 1962. 240 p. 2522 refs.

(NASA-SP-3) GPO: \$1.25.

This is a list of selected publications and releases of the National Aeronautics and Space Administration issued during the three years following the Agency's establishment in October, 1958. The list contains all NASA Technical Reports, Technical Notes, Technical Translations, and technical articles having NASA sponsorship and published in scientific journals; selected NASA releases, speeches, and general informational and educational publications; and Congressional documents relating to NASA activities. (R.C.M.)

N62-14141 Max-Planck-Institut für Strömungsforschung, Göttingen (Germany).

BIBLIOGRAPHIE DER VERÖFFENTLICHUNGEN ÜBER HYDRO- UND AERODYNAMIK, 1907-1959. [BIBLIOGRAPHY OF PUBLICATIONS ON HYDRODYNAMICS AND AERODYNAMICS, 1907-1959].

W. Tollmien and H. Schlichting. 1960. 142 p. 1881 refs. (Max-Planck-Institut für Strömungsforschung und der Aerodynamischen Versuchsanstalt, Mitteilungen 25)

This bibliography includes: (1) publications, (2) graduate research, theses, and inaugural dissertations, (3) contributions from various reports and investigations on German aviation research, (4) contributions from the "Lilienthal Convention of Aviation Research" and "the Germany Academy for Aviation Research", and (5) contributions from the "Göttinger Monographs of the Advancement in German Aviation Research since 1929," and "Scientific Research and Medicine in Germany from 1939-1945." (I.v.L.)

N62-14149 Institut für Luftfahrttechnik, Technische Hochschule, Darmstadt (Germany).

VTOL/STOL—AIRCRAFT BIBLIOGRAPHY [1923-1960].

Comp. by G. Bock and H. Spintzyk, in collaboration with R. Bock and H. Gerhardt. Mar. 31, 1961. 283 p. 973 refs. Prepared on AGARD request.

A bibliography is prepared on AGARD request and represents an extension of the work done for the meeting of the Flight Mechanics Panel, Paris, June 1960. The bibliography covers the literature till the end of 1960 and comprises all available publications related to problems in the field of V/STOL. The different fields of V/STOL covered are general studies; aerodynamic problems; stability and control in hovering, and transition flight; power plants; test-techniques; atmosphere; operational problems; loads and construction. The bibliography is divided into the following sections: classification section; bibliography by subjects; literature listed by year of publication; and bibliography by authors. (J.R.C.)

N62-14282 Deutsche Forschungsanstalt für Hubschrauber und Vertikalflugtechnik (Germany).

VERTIKALSTARTFLUGZEUGE UND LUFTKISSENFAHRZEUGE. EINE ÜBERSICHT ÜBER DIE VERSCHIEDENEN ARTEN, IHRE START- UND LANDEBAHNNEN SOWIE PROBLEME DER STEUERUNG UND STABILITÄT. [VTOL AIRCRAFT AND AIR CUSHION VEHICLES. A SURVEY OF THE VARIOUS TYPES, THEIR TAKE-OFF AND LANDING, AS WELL AS PROBLEMS OF CONTROL AND STABILITY].

W. Just. Stuttgart, Verlag Flugtechnik, Jan. 1961. 346 p. 815 refs. In German.

(I/5 Bericht 33; Arbeits- und Forschungsgemeinschaft Graf Zeppelin, Bericht 2/59 und 3/60)

This report surveys requirements, such as flight performance, control, and stability, that must be established for VTOL aircraft and air cushion vehicles. Flight requirements for helicopters and air cushion vehicles are discussed in detail. The report also includes a listing of literature published up to 1960 on VTOL aircraft. The listing is arranged by subject areas and types of VTOL aircraft.

(Author Abstract trans. by A.S.)

N62-14350 Forest Products Lab., Madison, Wis.

LIST OF PUBLICATIONS ON STRUCTURAL SANDWICH, PLASTIC LAMINATES, AND WOOD-BASE AIRCRAFT COMPONENTS AVAILABLE FROM THE FOREST PRODUCTS LABORATORY, MADISON 5, WIS.

June 1962. 14 p. 296 refs.

(RPI-4)

The document contains a list of publications, with accession numbers, for categories of Solid Wood; Plywood and Veneers; Joints and Fasteners; All Wood Laminates; Plastic Laminates; Stabilized Wood and Wood-Resin Laminates; Pulp, Paper, and Lignin Laminates; Adhesives and Glue-Joint Properties; Sandwich Construction; and Pathological and Biological Features. (P.F.E.)

N62-14575 International Union of Pure and Applied Chemistry. **BIBLIOGRAPHY ON THE HIGH TEMPERATURE CHEMISTRY AND PHYSICS OF GASES AND GAS-CONDENSED PHASE REACTIONS.** Comp. by I. Brewer (U. of Calif.). June 30, 1962. 22 p. 192 refs. (No. 4)

The areas covered are high temperature spectroscopy and reactions between gases and condensed phases. (R.C.M.)

N62-14577 International Union of Pure and Applied Chemistry. **BIBLIOGRAPHY ON THE HIGH TEMPERATURE CHEMISTRY AND PHYSICS OF MATERIALS IN THE CONDENSED STATE.**

J. J. Diamond, et al. 1962. 56 p. 570 refs.

(No. 2)

A bibliography is compiled on the high temperature chemistry and physics of materials in the condensed state. A listing includes the following subject headings: devices for achieving temperature above 1500° C; devices for measuring and controlling temperatures above 1500° C; properties, at temperatures below 1000° C, of materials which melt above 1500° C; properties, at temperatures above 1000° C, of materials which melt below 1500° C; phase equilibria; and reactions at temperatures above 1000° C. (J.R.C.)

N62-14816 Los Alamos Scientific Lab., N. Mex.

RADIATION EFFECTS ON SEMICONDUCTOR DEVICES.

Carroll Sue Schwiening, comp. Aug. 9, 1962. 72 p. An annotated bibliography of 155 refs.

(Contract W-7405-ENG-36)

(LAMS-2706) OTS: \$1.75.

An annotated bibliography on radiation damage to semiconductor devices is given, with special emphasis placed on Van Allen belt radiations and on neutron damage. The compilation was made from information in eight sources and abstracts are given as they appear in these sources. Arrangement of the entries in this bibliography is alphabetical by the name of the first author of each item. (A.S.)

N62-14827 Research and Advanced Development Div., Avco Corp., Wilmington, Mass.

THERMODYNAMICS OF CERTAIN REFRACTORY COMPOUNDS. VOL. 2. BIBLIOGRAPHY OF CODED REFERENCES. [Final] Technical Documentary Report [1 May 1960-30 Apr. 1961].

S. L. Bender, R. E. Dreikorn, T. H. Einwohner, R. C. Feber, R. E. Gannon, P. L. Hanst, M. E. Ihnat, J. P. Phaneuf, H. L. Schick, and C. H. Ward. Wright-Patterson AFB, Ohio, Directorate of Materials and Processes, May 1962. 300 p. Approximately 2500 refs. Vol. 1, Literature Search, Computations, and Preliminary Studies, see N62-14349 12-33.

(Contract AF 33(616)-7327)

(RAD-TR-61-12, Pt. 1, Vol. 2; ASD-TR-61-260, Pt. 1, Vol. 2)

Theoretical and experimental studies were undertaken of the thermodynamics of certain refractory compounds from 298.15° to 6000° K. The list of compounds included the oxides, borides, carbides, and nitrides of the metals in groups IVB, VB, VIB, and VIIB of the periodic chart in addition to those of silicon, scandium, beryllium, magnesium, calcium, strontium, and osmium. Tables of ideal gas thermodynamic functions of all the above elements were either prepared or brought up to date. Reviews and critical analyses of the available data were completed on the oxide systems of Be, Ca, Cr, Mg, Mo, Sr, Ti, and W, the borides of Ti, and the monocarbide of Ti. Sixty-one tables of thermodynamic functions, in various degrees of completion, were prepared on the important chemical species of the above systems. A comprehensive review of the literature was made for the existing theoretical background needed in the interpretation of high-temperature C_p data and for the improvement of methods of estimating missing data. (Author Abstract)

N62-15105 Federal Aviation Agency, Washington, D.C.

BIBLIOGRAPHIES OF TECHNICAL REPORTS. INFORMATION RETRIEVAL LIST NO. 1.

July 1962. 48 p. 485 refs.

This list of references provides a guide to the basic bibliographies, subject indexes, and publications that are currently in the technical report collection of the Information Retrieval Section (MS-112) of the Federal Aviation Agency. (R.C.M.)

N62-15394 International Union of Pure and Applied Chemistry. **BULLETIN OF THERMODYNAMICS AND THERMOCHEMISTRY, NO. 5, 1962.**

H. A. Skinner (Manchester U.), Guy Waddington (National Acad. Sci.), and Edgar F. Westrum, Jr., (Michigan U.), eds., Manchester, Mar. 15, 1962.

This bulletin provides an annual up-to-date global survey of progress in experimental thermodynamics and thermochemistry through short abstracts sent in by contributors. It also contains as a regular feature a bibliography of recently published papers. (J.R.C.)

N62-15558 Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena. **ASTRONAUTICS INFORMATION. ELECTRICALLY PROPELLED SPACECRAFT AND ASSOCIATED SUBJECTS.**

Judith Hayes, comp. May 1962. 66 p. 314 refs. (NASA Contract NAS7-100) (JPLAI/LS-428) OTS: \$6.60 ph, \$2.18 mf.

This document presents abstracts on electrically propelled spacecraft, electric propulsion, and associated subjects. An author index is included. (R.C.M.)

N62-15702 Aeromedical Research Lab. (6571st), Aerospace Medical Div., Holloman AFB, N. Mex.

THE CHIMPANZEE: A TOPICAL BIBLIOGRAPHY. [Final Report]. Frederick H. Rohles, Jr. June 1962. 313 p. 2367 refs. (ARL-TDR-62-9)

This bibliography encompasses the following areas of research on the chimpanzee: anatomy, physiology and pharmacology, pathology and experimental medicine, psychobiology, and miscellaneous researchers. (Author Abstract)

N62-16170 Continental Can Co., Inc., Chicago, Ill. **SURVEY OF PACKAGING REQUIREMENTS FOR RADIATION PASTEURIZED FOODS.**

George O. Payen, Jr., and Clement C. Schmiede, comps. July 31, 1962. 149 p. 859 refs. (Contract AT(11-1)-989) OTS: \$2.50.

The literature pertinent to the use of packaging materials for radiation-processed foods has been reviewed and tabulated. The conclusions drawn from these data have been applied to the probable package engineering requirements of five fishery and five fruit products under investigation by the AEC for shelf life extension by radiation-pasteurization. The needed research and field testing program is outlined. A bibliography of approximately 450 references and 18 tables of data are included. (Author Abstract)

N62-16256 Directorate of Materials and Processes, Aeronautical Systems Div., Wright-Patterson AFB, Ohio. **BIBLIOGRAPHY OF SUPER-SONIC TRANSPORT CANDIDATE METALS.**

Don Ingels and George Young. Apr. 20, 1962. 162 p. 270 refs. (ASRCE-TM-62-7)

This bibliography provides an aid in searching for information on metals for use in the supersonic transport. The bibliography includes ASD technical reports, reports prepared by other DOD agencies, and some unpublished reports from aerospace manufacturers. Abstracts are listed in sequential order according to report accession numbers. A materials index is included. (J.R.C.)

N62-16352 Space Technology Labs., Inc., Redondo Beach, Calif. **TECHNIQUES FOR ANALYSIS OF NONLINEAR ATTITUDE CONTROL SYSTEMS FOR SPACE VEHICLES. VOLUME IV. REFERENCES AND BIBLIOGRAPHY. [Final] Report.**

E. I. Ergin, V. D. Norum, and T. G. Windeknecht. Wright-Patterson AFB, Ohio, Flight Control Lab., June 1962. 74 p. 369 refs. (Contract AF 33(616)-7811) (ASD-TDR-62-208, Vol. IV)

Volume IV is a collection of references and bibliography with annotations and comments covering the spectrum of the study effort. (Author Abstract)

N62-16386 Atomic Energy Commission. Div. of Research, Washington, D.C.

CONTROLLED FUSION AND PLASMA RESEARCH. A Literature Search [Jan. 1961-May 1962].

Sidney F. Lanier, comp. AEC Div. of Technical Information, Aug. 1962. 204 p. 1672 refs. (TID-3557(Suppl. 1); supplements TID-3072(Rev. 1)) OTS: \$3.00.

A total of 1672 references are listed on plasma physics, magnetohydrodynamics, magnetic confinement, experimental devices, and other subjects related to research in controlled fusion. The references were taken from *Nuclear Science Abstracts (NSA)* and cover the period January 1961 through May 1962. (V.D.S.)

N62-16407 Atomic Energy Commission. Div. of Technical Information, Washington, D.C.

CRITICAL PATH SCHEDULING: A PRELIMINARY LITERATURE SEARCH.

Hugh E. Voress, Elmer A. Houser, Jr., and Fred E. Marsh, Jr., comps. July 1962. 36 p. 305 refs. (TID-3568(Rev. 1)) OTS: \$0.75.

This report is a revised bibliography of 305 references concerning the Critical Path Scheduling planning technique (also known as PERT, PEP, and LESS). (V.D.S.)

N62-16418 Lawrence Radiation Lab., U. of Calif., Livermore. **PHYSICAL PROPERTIES AND PHASE DIAGRAMS OF TEN REFRACTORY OXIDES. PART 2, JOURNAL LITERATURE: SELECTED BIBLIOGRAPHY.**

Zanier D. Lane, Mary Jane Tunis, Eileen A. Olmsted, James H. Kennedy, and Glenn R. Maynard. July 1962. 90 p. 759 refs. (Contract W-7405-eng-48) (UCRL-6262, Pt. 2) OTS: \$2.00.

This bibliography lists selected journal articles published through 1960 on the physical properties and phase diagrams of ten refractory oxides: alumina, beryllium, calcium, cerium, chromium, magnesium, tin, titanium, yttrium and zirconium oxides. (M.P.G.)

N62-16433 Aerospace Corp. Materials Science Lab., El Segundo, Calif.

RE-ENTRY PROTECTIVE SYSTEMS: A BIBLIOGRAPHY OF REFRACTORY METALS PROTECTIVE SYSTEMS RESEARCH.

D. H. Leeds. Aug 6, 1962. 168 p. 2014 refs. (Contract AF 04(695)-169) (TDR-169(3240-31)TR-1; DCAS-TDR-62-146)

The purpose of this bibliography is twofold: to direct research in the field of refractory metals protective coatings away from present silicide approaches and into systems capable of protection over 3500°F, and to familiarize the materials engineer with past and current research in his field (including the valuable examples set by silicide protection theory), thereby enabling him to interpret his own science for the designer. Through such an exchange it should become apparent to the designer that refractory metal alloy development and protective coating development are interdependent. The emphasis

of the bibliography is upon research performed on the protection of refractory metals from unfavorable environments at elevated temperatures. The four major systems covered are: molybdenum (739 references); columbium (226 references); tungsten (219 references); and tantalum (828 references). Also included is a brief introductory section which stresses the need for research on coatings for refractory metals in hypersonic environments. (Author Abstract)

N62-16447 Space Sciences Lab., General Electric Co., Philadelphia, Pa.

PLANETARY ATMOSPHERES AND RELATED INFORMATION; A SUPPLEMENTARY BIBLIOGRAPHY TO R61SD126, Oct. 1961-Aug. 1962.

E. Colabrese. Aug. 1962. 46 p. 110 refs.
(R62SD85)

N62-16581 MSA Research Corp., Callery, Pa.

LIQUID METALS TECHNOLOGY ABSTRACT BULLETIN FOR THE PERIOD JANUARY 1962 TO SEPTEMBER 1962. (Twentieth Issue).

[1962]. 14 p. 33 refs.
(LM/TAB-20)

This is the twentieth issue of a series of abstract bulletins covering current literature on liquid metals. These bulletins will be issued at approximate quarterly intervals, depending upon the volume of literature to be covered. Existing abstracts will be used unless they are not adequate with respect to the subject scope. (Author Abstract)

N62-16583 Engineering Societies Library, New York, N.Y.

MEASUREMENT OF STACK GAS VELOCITY AND METHODS OF SAMPLING STACK GASES AND THEIR PARTICULATES. Literature Search.

July 19, 1962. 21 p. 91 refs.
(Search 6216)

N62-16590 Lehigh U., Bethlehem, Pa.

MATHEMATICAL THEORIES IN PERFORMANCE DECISION MAKING AND LEARNING; A LITERATURE REVIEW. [Final Report, Feb. 1959—Aug. 1960].

Arthur L. Brody and Solomon Weinstock. Wright-Patterson AFB, Ohio, Behavioral Sciences Lab., July 1962. 122 p. 402 refs.
(Contract AF 33(616)-6179)
(MRL-TDR-62-76) OTS: \$2.75.

CONTENTS:

1. THE ASSESSMENT OF MATHEMATICAL THEORIES IN PSYCHOLOGY. p. 2-15. 18 refs.
2. INFORMATION THEORY AS APPLIED TO PSYCHOLOGICAL PROBLEMS. p. 16-58. 201 refs.
3. GAME AND DECISION THEORY. p. 59-75. 60 refs.
4. PROBABILISTIC THEORIES OF LEARNING. p. 76-113. 123 refs.

N62-16672 Plastics Technical Evaluation Center, Picatinny Arsenal, Dover, N.J.

SUBJECT INDEX, BIBLIOGRAPHY, AND CODE DESCRIPTION OF TECHNICAL CONFERENCE PAPERS ON PLASTICS: 15 FEB. 1961 - 23 FEB. 1962.

Arnold E. Molzon. June 1962. 60 p. 441 refs.
(Plastec Rept. 11) OTS: \$1.50.

The papers presented at the technical conferences on plastic materials and related technology, within a 1-year period ending 23 February 1962, have been listed and indexed by subject. Over 400 papers from 10 conferences are covered. This report serves as a guide to the subjects presented and, by means of a numerical code system, it tells the reader what type of information each article contains. Included are a bibliography and lists of references thereto, on plastic materials and technical data. (Author Abstract)

N62-16721 American Cyanamid Co., Bound Brook, N.J.

LITERATURE REVIEW OF NEAR INFRARED ATTENUATING MEDIA. [Final] Technical Documentary Report [Apr.-Oct. 1961].

Ralph A. Coleman and Haig C. Donoian. Wright-Patterson AFB, Ohio, Life Support Systems Lab., May 1962. 30 p. 135 refs.
(Contract AF 33(616)-8056)
(MRL-TDR-62-54) OTS: \$0.75.

The purpose of this review was to investigate the literature for near infrared absorbing or attenuating systems with an emphasis on those that allow transmission of visible wavelengths. The spectral range of interest, therefore, lies between 0.4 to 5.0 microns. The types of infrared attenuating systems investigated include inorganic and organic compounds and other optical methods, such as the interference filters and Christiansen filters. (Author Abstract)

N62-16735 Atomic Energy Commission. Div. of Technical Information, Washington, D.C.

DIRECT ENERGY CONVERSION AND SYSTEMS FOR NUCLEAR AUXILIARY POWER (SNAP): A LITERATURE SEARCH.

Sidney F. Lanier and Henry D. Raleigh, comps. Aug. 1962. 55 p. 422 refs.
(TID-3561(Rev. 2)) OTS: \$1.25.

This bibliography pertinent to the SNAP Program covers: radioisotope-fueled units; reactor-fueled units; direct energy conversion; and general topics on nuclear auxiliary power. (R.C.M.)

N62-16752 Aerospace Medical Research Labs. (6570th), Aerospace Medical Div., Wright-Patterson AFB, Ohio.

A BIBLIOGRAPHY ON AIRCREW PROFICIENCY MEASUREMENT. [Final Report].

Robert Buckhout. Behavioral Sciences Lab., May 1962. 26 p. 234 refs.
(MRL-TDR-62-49) OTS: \$1.00.

Reports on aircrew proficiency measurement have been compiled in the interest of research on the problem of assessing the performance of combat aircrew members. Particular emphasis has been placed on material related to the potential use of ground-based flight simulators as sophisticated, objective, aircrew proficiency measurement tools. The reports are listed under six sections: First Order Measurement, Combination Measures, Validation, Measurement Equipment, General Analyses and Reviews, and Background Reports. All of the reports have been coded in accordance with their relevance to kinds of aircrew tasks and to aircrew positions. (Author Abstract)

N62-16763 Space Technology Labs., Inc., Redondo Beach, Calif.

MASERS AND LASERS: A BIBLIOGRAPHY.

J. F. Price and A. K. Dunlap. June 1962. 167 p. 1294 refs.
(Research Bibliography 41; Rept. 9990-6052-KU-R01; AD-274-843)

This bibliography is composed of approximately eight hundred maser references, five hundred optical maser (laser) references, and additional references on irasers, frasers, and rasers. The bibliography also includes an author index, originating agency index, periodical index, and an ASTIA index. (J.R.C.)

N62-16764 Space Technology Labs., Inc., Redondo Beach, Calif.

INTERPLANETARY MATTER: A BIBLIOGRAPHY.

L. R. Magnolia. June 1962. 592 p. 1650 refs.
(Research Bibliography 42; Rept. 9990-6058-KU-000; AD-276-064)

This bibliography consists of 1650 references (mostly annotated) on asteroids, comets, meteorites, meteors, micrometeorites, noctilucent clouds, nonterrestrial dust, origin of the solar system, tektites, the zodiacal light, and related subjects. The majority of the references are those published between January 1950, and March 1962. Author, subject, agency, periodical, and ASTIA indices are also included. (Author Abstract)

N62-16765 Federal Aviation Agency, Washington, D.C.

AIRCRAFT NOISE AND ITS PROBLEMS. Selected Bibliographic List No. 6.

FAA Office of Management Services, Aug. 1962. 23 p. 255 refs.

This bibliography lists pertinent readings on the subject of aircraft noise and its inherent problems, of concern to Federal, state and local officials and organizations involved. The list includes general references, community problems, noise abatement procedures, structural and design problems, legal aspects, helicopters, and alleviation methods. (Author Abstract)

N62-16835 Colorado School of Mines Research Foundation, Golden.

SOURCES OF INFORMATION ON ROCK PHYSICS. Current Literature Final Report [Mar. 1-Apr. 14, 1962].

Lorraine Burgin. Washington, AEC Div. of Tech. Information, Mar. 28, 1962. 117 p. 290 refs.

(LRL Order 8912807)

(UCRL-13039) OTS: \$2.50.

This bibliographic review covers rock physics, rock mechanics, wave propagation, and other related subjects. In the case of foreign articles, the titles, wherever available, appear in the language of the article and are then followed by the English translation. (A.S.)

N62-16852 International Union of Pure and Applied Chemistry. **BIBLIOGRAPHY ON THE HIGH TEMPERATURE CHEMISTRY AND PHYSICS OF MATERIALS IN THE CONDENSED STATE, NUMBER 1, JANUARY, FEBRUARY, MARCH, 1962.**

N. F. H. Bright et al. [1962] 46 p. 471 refs.

N62-16853 International Union of Pure and Applied Chemistry. **BIBLIOGRAPHY ON THE HIGH TEMPERATURE CHEMISTRY AND PHYSICS OF GASES AND GAS-CONDENSED PHASE REACTIONS, NO. 3.**

L. Brewer (U. of Calif.), Comp. Mar. 31, 1962. 21 p. 188 refs.

N62-16868 International Union of Pure and Applied Chemistry. **BIBLIOGRAPHY ON THE HIGH TEMPERATURE CHEMISTRY AND PHYSICS OF GASES AND GAS-CONDENSED PHASE REACTIONS, NO. 2.**

L. Brewer (U. of Calif.), Comp. Sept. 30, 1961. 18 p. 146 refs.

N62-16983 Aeronautical Research Labs., Melbourne (Australia). **BIBLIOGRAPHY ON ELECTRICAL RESISTANCE STRAIN GAUGES. First Edition, Before and Including 1950.**

J. L. Atkinson, G. J. Saleeba and I. G. Scott, comps. July 1961. 66 p. 645 refs.

(Bibliography A.R.L./SM.3)

A collection has been made of known sources of information relating to electrical resistance strain gauges, their characteristics, application, and use, together with the necessary electrical, or electronic, measuring equipment. Some closely related topics are also listed. (Author Abstract)

N62-17244 Argonne National Lab., Ill.

BEAM TRANSPORT. A SELECTED, ANNOTATED BIBLIOGRAPHY 1949-1961

Robert R. Kepple. Aug. 1962. 288 p. 891 refs.

(Contract W-31-109-eng-38)

(ANL-6602)

This bibliography contains references on electron optics, electron microscopy, and particle accelerators. The period covered is 1949 to

1961. The accelerator references were selected, for the most part, according to their applicability to problems of transporting charged particles in areas external to accelerators. However, a few basic references have been included that deal with the focusing of the beam within the accelerator. V.D.S.

N62-17307 International Union of Pure and Applied Chemistry. **BIBLIOGRAPHY ON THE HIGH TEMPERATURE CHEMISTRY AND PHYSICS OF MATERIALS IN THE CONDENSED STATE, NUMBER 3, JULY, AUGUST, SEPTEMBER, 1962**

J. J. Diamond et al. [1962] 48 p. 502 refs.

This bibliography covers material on devices for achieving and measuring temperatures above 1500° C and devices for making physical measurements above 1000° C. Also included are the properties of metallic and nonmetallic materials above 1000° C, phase equilibria, and reactions at temperatures above 1000° C. R.C.M.

N62-17309 Space Technology Labs., Inc., Los Angeles, Calif.

THE LUNAR PROBLEM. VOL. 1: BIBLIOGRAPHY. VOL. 2: INDEX

L. R. Magnolia and J. R. Trew. Oct. 1961. Vol. 1, 272 p. Vol. 2, 29 p. 1030 refs. Vol. 2 contains author, source and subject indices (STL/AB 61-5110-40). Available from Space Technology Labs.

This bibliography is composed of annotated and abstracted lunar references, arranged alphabetically by corporate source or by author when no corporate source is given. The index, in the second volume, is arranged according to author, source, and fields of interest to the lunar problem. M.P.G.

N62-17439 Science and Tech. Div., Library of Congress, Washington, D.C.

BIBLIOGRAPHY OF THE BIOLOGICAL EFFECTS OF MAGNETIC FIELDS

Leroy D. Davis, Kristallo Pappajohn, and Ilga M. Plavnieks, comps., Paul E. Spiegler, ed., and Arnold J. Jacobius. Washington, Federation of Am. Soc. for Exptl. Biol. 40 p. 393 refs. Repr. from Federation Proc., v. 21, no. 5, pt. II, suppl. 12 (NASA Order R-34)

N62-17478 Lawrence Radiation Lab., U. of Calif., Livermore. **BIBLIOGRAPHY OF MATERIALS PLATING BY THERMAL DECOMPOSITION OF GASES OR VAPORS**

Charles P. Coughlen. June 28, 1962. 13 p. 83 refs.

(Contract W-7405-eng-48)

(UCRL-6997) OTS: \$0.50

This bibliography covers the field of gas plating for the period of January 1958 to April 1962. The search was made from technical articles and patent literature. R.C.M.

N62-17542 Aerospace Medical Research Labs. (6570th), Aerospace Medical Div., Wright-Patterson AFB, Ohio

A WORKING BIBLIOGRAPHY ON THE EFFECTS OF MOTION ON HUMAN PERFORMANCE [Final] Technical Documentary Report [Jan.-Dec. 1961]

Robert Buckhout. July 1962. 56 p. 546 refs.

(MRL-TDR-62-77) OTS: \$1.50

In this bibliography, a list of reports is compiled from a number of disciplines which bear on the problem of motion and its effects on human performance. Psychophysiological reports in the area of spatial orientation, perception, and receptor mechanisms provide background on the human organism in relation to motion stimuli. The effects of aerospace vehicle motion are represented by a compilation of studies of performance under acceleration, vibration and buffeting, tumbling, and weightlessness. Finally, reports on training and motion simulation, equipment and methodology, and general analyses of the whole problem area are presented. Author

N62-17564 Lockheed Missiles and Space Co., Sunnyvale, Calif.
RADIATION EFFECTS ON TEFLON: AN ANNOTATED BIBLIOGRAPHY

William L. Hollister, Comp. Feb. 1962 46 p 79 refs
 (Contract AF 04(647)-840)
 (Special Bibliography SB-61-65)

N62-17679 Joint Publications Research Service, Washington, D.C.
CONCLUSIONS, BIBLIOGRAPHY AND TABLE OF CONTENTS FROM: INTERCEPTORS

May 11, 1962 178 p 2148 refs Transl. from the book "Inter-
 ceptory" Moscow, 1960
 (JPRS-13727) Distributed by OTS

The current status of interceptors is reviewed: chemoreceptors, mechanoreceptors, thermoreceptors, and the mechanisms of the interceptive analyzer are covered. R.C.M.

N62-17925 RAND Corp., Santa Monica, Calif.

SCIENCE OF THE SOLAR SYSTEM: 1961 LITERATURE SURVEY, PART III—BOOK NOTES: A SELECTED LIST

Donna Wilson Nov. 1962 46 p 40 refs Prepared for journal publication
 (NASA Contract NASr 21(04); Contracts AF 49(638):700 and N-33561)

(RM-3109/3-NASA) OTS: \$4.60 ph, \$1.58 mf

A collection of annotated book listings on solar-system science prepared from available books published in 1961 is presented. A subject index and an author index citing the entry numbers are included. Author

1963

STAR ENTRIES

N63-10073 Army Chemical Research and Development Labs., Army Chemical Center, Md.

ELEVENTH MATERIALS REVIEW

Arthur Lyem Apr. 1962 108 p 360 refs For Tenth Materials Review see N62-10663 03-18
 (CRDL-SP-4-34)

The literature survey culminating in this review provides selected information concerning recent worldwide technological advances that are presented under the following five major headings: high polymers, plastic materials, synthetic fibers, miscellaneous organic and inorganic materials, and metals. Over 350 articles have been abstracted from various publications and languages. Materials and technological aspects are discussed briefly, and a complete bibliography is given.

Author

N63-10163 Picatinny Arsenal. Plastics Technical Evaluation Center, Dover, N. J.

HEALTH HAZARDS AND TOXICITY OF PLASTICS: A CROSS-INDEXED BIBLIOGRAPHY

Arnold E. Molzon Mar. 1962 25 p 81 refs
 (PLASTEC-5) OTS: \$0.75

Selected references pertaining to the toxicity and/or health hazards present during the fabrication of plastics and their normal use are listed. References on health hazards of plastics in medical applications are treated in a separate publication. Author

N63-10170 Picatinny Arsenal. Plastics Technical Evaluation Center, Dover, N. J.

EFFECTS OF THE SPACE ENVIRONMENT ON PLASTICS: A SUMMARY WITH ANNOTATED BIBLIOGRAPHY

Arthur H. Landrock July 1962 88 p 202 refs
 (PLASTEC Rept. 12) OTS: \$2.25

A brief summary outlines the various space environmental factors, natural and induced, and discusses their effects on plastics and related materials. These factors are: ultraviolet radiation, high-vacuum environment, temperature extremes, high-energy radiation and high-energy particles, sputtering, and micrometeorite erosion. Structural plastics, coatings, and elastomeric materials are considered. The bibliography lists 202 selected references. In the annotations, plastic materials covered in the references are listed, and results and conclusions are outlined when feasible. The arrangement is alphabetical by author. An index in depth is provided, covering both materials and subjects. This index is supplemented with additional indexes listing personal and corporate authors, military contract numbers, ASTIA AD numbers, report numbers, and technical conferences. Author

N63-10195 International Union of Pure and Applied Chemistry
BIBLIOGRAPHY ON THE HIGH TEMPERATURE CHEMISTRY AND PHYSICS OF GASES AND GAS-CONDENSED PHASE REACTIONS, NO. 5

L. Brewer, comp. (U. of Calif.) Sept. 30, 1962 27 p 247 refs

This bibliography on high-temperature chemistry and physics includes information on the following: reactions between gases and condensed phases, and spectroscopy of interest to high-temperature chemistry. J.R.C.

N63-10461 California U., Livermore. Lawrence Radiation Lab.
LASERS, A BIBLIOGRAPHY

Carl J. Wensrich Jan. 1962 16 p 129 refs
 (Contract W-7450-eng-48)
 (UCRL-6769) OTS: \$0.50

This bibliography on Light Amplification by Stimulated Emission of Radiation is compiled from the journal literature with few exceptions. All the standard library sources were used. Author

N63-10518 Atomic Energy Commission. Div. of Technical Information, Washington, D.C.

REACTOR SAFETY: A LITERATURE SEARCH

Richard J. Smith, comp. Mar. 1962 104 p 1558 refs
 (TID-3525 (Rev. 4)) OTS: \$2.25

A total of 1555 references to unclassified reports and published literature is presented on reactor systems, materials, and operation designed to provide maximum safety for the reactor, reactor personnel, and environs. Information is included concerning incidents and conditions of operation considered hazardous. Author and report number indexes are provided. Author

N63-10605 Atomic Energy Commission. Div. of Technical Information, Washington, D. C.

AN ATOMIC RADIATION BIBLIOGRAPHY A list of Reports Submitted to the United Nations Scientific Committee on the Effects of Atomic Radiation (Supplement)

Alfred W. Klement, Jr., comp. May 15, 1962 32 p 767 refs
 (TID-3909(Suppl. 1)) OTS: \$0.75

N63-10649 Minnesota U., Minneapolis

BIBLIOGRAPHY AND TABULATION OF DAMPING PROPERTIES OF NON-METALLIC MATERIALS [Final Report, June 1957 to Sept. 1960]

Sun Hwan Chi Wright-Patterson AFB, Ohio, Directorate of Materials and Processes, Sept. 1962 154 p 200 refs
 (Contract AF 33(657)-7453)
 (WADD-TR-60-540)

This bibliography was compiled as an aid for those people interested in damping research and related fields. It contains a nearly complete list of references on the damping properties of nonmetallic materials for the period from 1929 to 1959, together with an index of nomenclature, units, and test methods. Tabulations of the in-phase and out-of-phase components of Young's modulus and the shear modulus for the various materials are also shown. Graphical representations of experimental data indicate the loss factor values for different materials. These values of the loss factor are compared to those of the representative structural metals. Author

N63-10724 Armed Services Technical Information Agency, Arlington, Va.

PLASMA PHYSICS AND MAGNETOHYDRODYNAMICS. AN ASTIA REPORT BIBLIOGRAPHY

Merrill F. Aukland, comp. Mar. 5, 1962 273 p 1350 refs (AD-271-170) OTS: \$2.75

This bibliography contains abstracts covering the following: electron-ion collisions, electromagnetic waves, gas ionization, magnetic pinch effects, microwaves, plasma jets, plasma sheaths, propellants and propulsion, oscillations, nuclear applications, reentry aerodynamics, shock waves and shock tubes, and solar and extra-terrestrial effects. R.C.M.

N63-10836 Aerospace Corp., El Segundo, Calif.
A SURVEY OF BUCKLING THEORY AND EXPERIMENT FOR CIRCULAR CONICAL SHELLS OF CONSTANT THICKNESS

Paul Seide In NASA. Langley Research Center, Langley Station, Va. Collected Papers on Instability of Shell Structures—1962 Dec. 1962 p 401-426 61 refs (See N63-10804 02-34)

A survey of the state-of-the-art for the stability of thin-walled conical shells is presented. Known theoretical results are summarized and compared with experiment. The shortcomings of present knowledge and recommended work for the future are discussed. Author

N63-10858 Northwestern U., Evanston, Ill.
RECENT SOVIET CONTRIBUTIONS TO INSTABILITY OF SHELL STRUCTURES

George Herrmann In NASA. Langley Research Center, Langley Station, Va. Collected Papers on Instability of Shell Structures—1962 Dec. 1962 p 721-730 61 refs (See N63-10804 02-34)

A review of major recent Soviet contributions to instability of shell structures is presented. Some current trends are discussed, and established programs for future research are indicated. A representative bibliography is included. Author

N63-11032 National Bureau of Standards, Boulder, Colo.
BIBLIOGRAPHY ON DIRECTION FINDING AND RELATED IONOSPHERIC PROPAGATION TOPICS 1955-61

Olaf D. Remmler, ed. Oct. 1962 119 p 849 refs (NBS-TN-127) GPO: \$0.60

This bibliography is an outgrowth of a conference held at the University of California at Los Angeles in June 1960 to discuss the aspects of long-range high-frequency radio propagation that affect radio location and direction finding, and the related problems of measurement and analysis. A group of the papers presented at the conference was published in the Radio Propagation Section (Section D) of the Journal of Research of the National Bureau of Standards, May-June issue, 1961. In connection with the conference the Numerical Analysis Research Staff of UCLA prepared a bibliography of published work on the conference subject covering the period 1955-1959. For this Technical Note the UCLA bibliography has been edited and extended to include some papers published in 1960 and the first half of 1961. This compilation, though by no means exhaustive, includes over 850 titles on direction finding and related topics ranging from instrumental details through observations and data analysis to theories of propagation. Author

N63-11055 Los Alamos Scientific Lab., N. Mex.

BIBLIOGRAPHY ON CORROSION BY LIQUID METALS (1957—SEPTEMBER 1962)

Helen J. Chick, comp. Nov. 23, 1962 39 p 170 refs (Contract W-7405-eng-36) (LAMS-2779) OTS: \$1.00

N63-11236 Du Pont de Nemours (E. I.) and Co. Savannah River Lab., Aiken, S. C.

TECHNIQUES FOR THE DETERMINATION OF TRITIUM. A LITERATURE SEARCH

Myra S. Feldman June 1962 58 p 203 refs (Contract AT(07-2)-1) (DP-511) OTS: \$1.25

References on the quantitative determination of tritium were compiled and arranged in an annotated bibliography. The references are limited to those pertinent to the instrumentation and techniques for tritium determination. Author

N63-11677 Naval Research Lab., Washington, D.C.

DIRECT ENERGY CONVERSION: LITERATURE ABSTRACTS

Dec. 1962 124 p 735 refs OTS: \$3.50

This document consists of a collection of references from various sources covering the current literature on thermoelectricity, thermionic emission, photoelectric processes, magnetohydrodynamics, electrochemical processes, energy storage, and energy sources. Author

N63-11737 Courant Inst. of Mathematical Sciences, New York U., N.Y.

FINAL REPORT (AND BIBLIOGRAPHY) OF SCIENTIFIC ACTIVITIES, OCTOBER 1957 TO MARCH 31, 1962

I. Bers June 26, 1962 5 p 31 refs (Contract DA-30-069-ORD-2153) (AROD-247-54)

This bibliography covers the following: subsonic and transonic gas dynamics, partial differential equations, quasi-conformal mappings and Riemann surfaces, and the theory of wave propagation. R.C.M.

N63-12222 Aerospace Corp., El Segundo, Calif.

FLIGHT VEHICLE POWER AND MATERIALS Applied Research Programs Abstract Bulletin, Volume II (Part I), Abstracts 2-1 through 2-81

K. B. Andrews, N. B. Crow, M. S. Hicks, E. Moore, E. H. Smith, and K. N. Triragoff July 1962 70 p 81 refs (Contract AF 04(647)-930) (TDR-930(2701-01)TN-1, Vol. II, Part I, No. 1; DCAS-TN-61-3, Vol. II, Part I, No. 1)

This bulletin contains abstracts of the unclassified literature on the subject of Flight Vehicle Power (USAF Applied Research Area 750F). Abstracts of selected references in the field of materials are also included. All abstracts are prepared from the original reports and are limited to those available within Aerospace Corporation. Author

N63-12260 Directorate of Materials and Processes, Aeronautical Systems Div., Wright-Patterson AFB, Ohio

LITERATURE SURVEY ON SYNTHESIS, PROPERTIES, AND APPLICATIONS OF SELECTED BORIDE COMPOUNDS [Final Report, 1 Feb.-1 Aug. 1962]

Barry R. Emrich Dec. 1962 124 p 107 refs (ASD-TDR-62-873)

A comprehensive review of the literature was made to assist in providing background information needed for future work concerning boride materials. The materials reviewed included solid bodies

of TiB₂, ZrB₂, HfB₂, VB₂, NbB₂, TaB₂, CrB₂, and ThB₂. This compilation presents information on synthesis, properties, and applications of the selected boride compounds, including selected abstracts and articles.

Author

N63-12294 Air U. Research Studies Inst., Maxwell AFB, Ala.
AN AEROSPACE BIBLIOGRAPHY [COVERING PERIOD THROUGH JAN. 1962]

Raymond Estep Sept. 1962 61 p 3100 refs
(AU-290-61-RSI)

This volume combines annotated bibliographies of materials covering air power and space sciences, that are available at the Air University Library. Subject and author indexes are included. R.C.M.

N63-12338 Brookhaven National Laboratory, Upton, N. Y.
NEUTRON CROSS SECTION EVALUATION GROUP. NEWS-LETTER NO. 7 [BIBLIOGRAPHY OF RUSSIAN SOURCES]

Sophie Moore Oct. 1962 17 p
(BNL 768(N-7)) OTS: \$0.50

This bibliography is a presentation of Russian abstracts in the fields of neutron cross sections and related neutron constants. I.v.L.

N63-12581 RAND Corp., Santa Monica, Calif.

SOLAR SYSTEM SCIENCE: 1961 LITERATURE SURVEY, PART III. BOOK NOTES: A SELECTED LIST

Donna Wilson Repr. from Icarus, v. 1, no. 3, Oct. 1962 p 286-295
40 refs
(NASA Contract NASr-21(04))

Included in this survey are annotated listings of books on solar system science published in 1961. I.v.L.

N63-12584 International Union of Pure and Applied Chemistry
BIBLIOGRAPHY ON THE HIGH TEMPERATURE CHEMISTRY AND PHYSICS OF GASES AND GAS-CONDENSED PHASE REACTIONS, NO. 6

L. Brewer, comp. (U. of Calif.) Dec. 31, 1962 14 p 115 refs

N63-12585 International Union of Pure and Applied Chemistry
BIBLIOGRAPHY ON THE HIGH TEMPERATURE CHEMISTRY AND PHYSICS OF MATERIALS IN THE CONDENSED STATE, NUMBER 4, OCTOBER, NOVEMBER, DECEMBER 1962

J. J. Diamond, ed. [1961] 58 p 586 refs

N63-12671 Virginia U. Research Labs. for the Engineering Sciences, Charlottesville

STATE-OF-THE-ART LITERATURE SURVEY OF METHODS FOR PRODUCTION OF MOLECULAR BEAMS IN THE ENERGY RANGE OF 1-1000 ev.

R. H. Austin and J. E. Christopher Dec. 1962 104 p 328 refs
(SP-620-101-62U)

This literature search was made as an aid to studies of neutral beam reactions with solid surfaces and gases in the energy range 1 ev to 1000 ev. The search included all applicable abstracting and indexing journals, both domestic and foreign, for the period 1950 to 1962, covering books, journal articles, technical reports, and translations. Primary emphasis was placed on production of the molecular beam, with secondary efforts to uncover literature on ion sources, neutralization of beams, preparation of clean target surfaces, and detection of neutral beam scattering. I.v.L.

N63-12728 Douglas Aircraft Co., Inc., Santa Monica, Calif.
THE GEOLOGY OF THE MOON. A PARTIAL BIBLIOGRAPHY OF MEASUREMENTS AND OBSERVATIONS

D. L. Weide Dec. 1962 99 p 574 refs
(SM-42582)

N63-12750 Aro, Inc., Arnold Air Force Station, Tenn.

BIBLIOGRAPHY: THE MAGNETIC SUSPENSION OF WIND TUNNEL MODELS

P. L. Clemens and A. H. Cortner Arnold Engineering Development Center, Feb. 1963 32 p 70 refs
(Contract AF 40(600)-1000)
(AEDC-TDR-63-20)

This is a selective bibliography of the literature on the magnetic suspension of wind-tunnel models, including a chronological arrangement of titles and abstracts under four main headings: Magnetic Suspension for Aerodynamic Testing, Non-Aerodynamic Applications of Magnetic Suspension, Magnetic Circuits and Their Electronic Controls, and Telemetry from Magnetically Supported Aerodynamic Models. An introduction presents a résumé of the state-of-the-art of magnetic model-suspension technology. Author

N63-12769 Bureau of Mines. Morgantown Petroleum Research Lab., W. Va.

ULTRASONIC PHENOMENA AND METHODS OF MEASUREMENT: A BIBLIOGRAPHY

Charles A. Komar and J. Pasini III 1963 35 p 261 refs
(BM-IC-8146)

N63-12876 Martin Co., Baltimore, Md.

A CHRONOLOGICAL BIBLIOGRAPHY ON THE BIOLOGICAL EFFECTS OF IMPACT

Carl C. Clark, Denis Faubert, and Bruce Cooper In Natl. Acad. of Sci. Impact Acceleration Stress A Symposium held at Brooks AFB, Tex., Nov. 27-29, 1961 p [373]-458 1015 refs (See N63-12844 07-16) NAS: \$3.00

A chronological bibliography on the biological effects of impact acceleration is described. A chronological index, an author index, and an organization index is included. I.v.L.

N63-12940 California U., Berkeley. Lawrence Radiation Lab.
BIBLIOGRAPHY FOR HINDERED INTERNAL ROTATION AND MICROWAVE SPECTROSCOPY

D. R. Herschbach Oct. 1962 33 p 201 refs
(Contract W-7405-eng-48)
(UCRL-10404) OTS: \$0.75

Results of microwave studies on internal rotation are summarized in tabular form. Also, a bibliography covering these studies is given. The tables present the molecular parameters derived from the spectra of all molecules studied up to September, 1962. R.C.M.

N63-13037 Bureau of Mines. Albany Metallurgy Research Center, Ore.

LIST OF REFERENCES TO METAL-HALIDE VAPOR PRESSURES WITH BIBLIOGRAPHY

F. D. Stevenson and S. D. Hill 1963 39 p 307 refs
(BM-IC-8147)

This report on the thermodynamic properties of metal halides gives a tabulation of vapor pressure references for each of the metal halides for which actual experimental data are reported, and a bibliography of the citations. Metal halides and oxyhalides are listed by chemical formula and chemical name, based on the Stock system. To facilitate location of the references, a listing of the journal titles and their abbreviations follows the bibliography. J.R.C.

N63-13213 Library of Congress. Science and Technology Div., Washington, D.C.

MATERIALS RESEARCH ABSTRACTS. A REVIEW OF THE AIR FORCE MATERIALS RESEARCH AND DEVELOPMENT

Charles D. Thibault, ed. 1962 536 p 2349 refs
(Supported by Directorate of Materials and Processes, Wright-Patterson AFB, Ohio)

A review of the Air Force materials research and development is presented in the form of an annotated bibliography. It includes the following fields: chemistry and biochemistry, materials, physical metallurgy and solid state physics, and problems in materials testing and application. I.v.L.

N63-13500 Atomic Energy Commission. Div. of Technical Information, Washington, D.C.

REACTOR HOT CHANNEL FACTORS AND BURNOUT A Literature Search

James M. Jacobs, comp. Nov. 1962 26 p 184 refs
(TID-3574) OTS: \$0.50

This literature search covers heat transfer properties of fuel elements and cooling-water channels used in pressurized water power reactors. The reports are grouped by the corporate author. R.C.M.

N63-13634 National Bureau of Standards, Washington, D. C.
BIBLIOGRAPHY ON ATOMIC TRANSITION PROBABILITIES
B. M. Glennon and W. L. Wiese Aug. 1, 1962 54 p 1180 refs
(Sponsored by ONR; Proj. DEFENDER)
(NBS Monograph-50) GPO: \$0.35

A bibliography on atomic transition probabilities is presented. The papers are arranged according to elements and stages of ionization, and the method employed and class of transitions are indicated behind each reference. Only articles on discrete transitions, both permitted and forbidden, are listed. Also included is a supplementary list of papers dealing with transition probabilities from a general point of view, a table showing the availability of numerical material on the individual atoms and ions, and a table of conversion factors. Author

N63-13687 Air Force Cambridge Research Labs. Geophysics Research Directorate, Bedford, Mass.

A BIBLIOGRAPHY OF THE ELECTRICALLY EXPLODED CONDUCTOR PHENOMENON [THIRD EDITION]

William G. Chace and Eleanor M. Watson Oct. 1962 123 p 258 refs
(AFCLR-62-1053)

This bibliography includes abstracts of reports on the exploding conductor (previously called 'exploding wire') phenomenon published from 1774 through 1961. There is also some coverage of important papers in adjacent areas of spectroscopy and instrumentation. Arrangement is by subject group, alphabetically by authors. Author

N63-13742 Atomic Energy Commission. Div. of Technical Information, Washington, D.C.

DIRECT ENERGY CONVERSION AND SYSTEMS FOR NUCLEAR AUXILIARY POWER (SNAP). A LITERATURE SEARCH

Sidney F. Lanier and Henry D. Raleigh, comps. Jan. 1963 66 p 553 refs
(TID-3561(Rev. 3)) OTS: \$1.50

A literature search of direct energy conversion and systems for nuclear auxiliary power includes: radioisotope-fueled units; reactor-fueled units; direct energy conversion; and nuclear auxiliary power. I.v.L.

N63-14022 Atomics International, Canoga Park, Calif.

KINETICS, STABILITY, AND CONTROL. A SELECTED BIBLIOGRAPHY

R. L. Johnson Mar. 15, 1963 43 p 548 refs
(Contract AT(11-1)-GEN-8)
(NAA-SR-7786) OTS: \$1.00

This report is a bibliography of literature pertaining to nuclear reactor kinetics, control, and stability published prior to the autumn of 1962. The purpose of this bibliography is to provide a ready source of references by which analysis of the dynamic behavior of SNAP reactor systems can be planned, guided, and evaluated. As a result, the emphasis is on theory and calculation. Author

N63-14073 Lockheed Missiles and Space Co., Sunnyvale, Calif.
NITRIL CHLORIDE (NO₂Cl): AN ANNOTATED BIBLIOGRAPHY
Helen M. Abbott Jan. 1963 23 p 58 refs
(Special Bibliography SB-62-63)

This compilation consists of 58 annotated references on the compound nitryl chloride (NO₂Cl). Government and world literature, covering the period of 1930 through November 1962, was surveyed for information concerning the preparation, purification, explosive properties, chemical reactions, physical constants, and possible use in propellants and binders. Author

N63-14236 Aerospace Corp. Materials Sciences Lab., El Segundo, Calif.

A PORTFOLIO OF EXPERIENCE IN REFRACTORY METAL PROTECTIVE SYSTEMS RESEARCH

D. H. Leeds Mar. 11, 1963 391 p 3792 refs
(Contract AF 04(695)-169)
(TDR-169(3240-31)TR-2; supersedes TDR-169(3240-31)TR-1; SSD-TDR-63-51)

The purpose of this document is twofold: to direct research in the field of refractory metal protective coatings away from present silicide approaches and into systems capable of protection over 3500 F, and to familiarize the materials engineer with past and current research in his field (including the valuable examples set by silicide protection theory), thereby enabling him to interpret his own science for the designer. The report is divided into five major sections: molybdenum; columbium; tungsten; tantalum; and a new section, general, which contains references to oxidation testing of refractory-metal systems and to areas of research allied to the one vital problem, the protection of these metals from unfavorable environments at elevated temperatures. Author

N63-14290 Cornell U. Center for Radiophysics and Space Research, Ithaca, N.Y.

BIBLIOGRAPHY OF NATURAL RADIO EMISSION FROM ASTRONOMICAL SOURCES—VOLUME FOR 1961

Martha Stahr Carpenter, ed. Sept. 15, 1962 253 p 547 refs
(NSF Grant 22414)

This annotated bibliography contains references to publications dealing with the aspects of radio astronomy that concern radio emissions originating in such astronomical sources as the sun, the galaxy, discrete sources outside the solar system, the moon, the planets, and the comets. A section is devoted to techniques and apparatus. I.v.L.

N63-14328 Chicago U. Enrico Fermi Inst. for Nuclear Studies, Ill.
SOLAR ENERGETIC RADIATION—A BRIEF REPORT AND BIBLIOGRAPHY OF U. S. RESEARCH 1960-1962

J. A. Simpson Feb. 1963 20 p 83 refs
(EFINS-63-9)

N63-14351 Flügwissenschaftliche Forschungsanstalt, Munich (W. Germany)

BIBLIOGRAPHIE ÜBER METEOROLOGISCHE RAKETEN UND SATELLITEN SOWIE IHRE MESSERGEBNISSE [BIBLIOGRAPHY OF METEOROLOGICAL ROCKETS AND SATELLITES AS PERTAINS TO MEASUREMENT DATA]

F. Wilckens Apr. 1962 55 p 500 refs In German and English
(FFM-55)

This bibliography on measurements made by meteorological rockets and satellites is arranged in the following subject categories: meteorological rocket systems in general, specific rocket systems, meteorological instrumentation, rocket probes of the stratosphere and mesosphere, and meteorological satellites. Trans. by M.P.G.

N63-14493 Oak Ridge National Lab., Tenn.

A FIFTEEN-YEAR SUMMARY OF PUBLICATIONS INVOLVING THE USES OF ELECTROMAGNETICALLY ENRICHED STABLE ISOTOPES

P. S. Baker Apr. 4, 1963 76 p 1358 refs
(Contract W-7405-eng-26)
(ORNL-3266) OTS: \$2.00

A history of stable isotopes is given as a preface to a bibliography of their uses. The bibliography covers the following areas: moments and spins, decay studies, genetics, energy levels, cross sections and yields, agriculture, biology, geology, medicine, chemistry, and general physics. R.C.M.

N63-14597 California U., Livermore. Lawrence Radiation Lab.
CURRENT BERYLLIUM LITERATURE: A SELECTED BIBLIOGRAPHY JANUARY 1961—DECEMBER 1962

Jan. 1963 343 p 2081 refs
(Contract W-7405-eng-48)
(UCRL-5705(Suppl. 2)) OTS: \$4.50

In each section of this bibliography, books and journal articles appear first, arranged alphabetically by author. Anonymous articles are arranged alphabetically by journal name at the end of each grouping. These are followed by reports and patents arranged by report numbers. Translations are located in the groupings in accordance with their original form i.e., book, journal, etc. Because of diversity of subject content, some references are located in more than one section. Many of the reports listed here are research and development reports released by the Atomic Energy Commission, Army, Navy, Air Force, and agencies of the Federal Government and their contractors. Most of these reports are available from the Office of Technical Services, U.S. Department of Commerce, Washington 25, D.C. Author

N63-14615 California U., Los Angeles
BIBLIOGRAPHY ON MEROMORPHIC FUNCTIONS

Phillip Emig Mar. 14, 1963 93 p 739 refs
(Grant DA-ARO(D)-31-124-G40)
(AROD-1517-51; Tech. Rept. 32)

A bibliography of meromorphic functions is presented. This bibliography is international in scope. I.v.I.

N63-14749 Polish Academy of Sciences, Warsaw

ABSTRACTS OF REPORTS OF THE SECOND CONFERENCE ON NONLINEAR VIBRATIONS [WARSAW, SEPTEMBER 18-21, 1962]

I Ballo (Czechoslovak Acad of Sci., Prague) et al [1962] 147 p 144 refs

Abstracts on the following topics have been included in this report on nonlinear vibrations: the dynamical properties of nonlinear systems with shock vibration damper, a method of solution to the computing system of nonlinear differential equations of computing set of variables, the behavior of solutions of the nonlinear system with two degrees of freedom, the analysis of processes arising in nonlinear electromechanical systems with two degrees of freedom, integral manifolds of nonlinear vibration systems, problems of nonlinear vibrations systems, recurrence formula in nonlinear systems, asymptotic properties of systems with a small time lag, superposition techniques in certain nonlinear systems, behavior of dynamical systems near the limit of stability region, behavior of certain nonlinear mechanical systems which contain delayed quantities, the problem of definition of roughness structural stability of a dynamical system in a bounded closed domain, the analogy of nonlinear system to classical dynamics, the number of topological types of polynomial differential systems, and free and forced vibrations of strongly nonlinear systems with many degrees of freedom. A.R.B.

N63-14810 Cryogenic Engineering Lab., National Bureau of Standards, Boulder, Colo

A BIBLIOGRAPHY OF THE THERMOPHYSICAL PROPERTIES OF OXYGEN AT LOW TEMPERATURES

J. C. Hust, L. D. Wallace, J. A. Crim, L. A. Hall, and R. B. Stewart
Feb 1962 87 p 237 refs
(Supported by NASA)
(NBS-TN-137; PB-161638) OTS: \$2.25

This bibliography of the mechanical, thermodynamic, and transport properties of oxygen below 0° C presents 325 references and is the result of a thorough search of the world's scientific and engineering literature. Listed for each reference are the properties and the corresponding temperature and pressure range, together with additional pertinent information such as the type of data (i.e., whether the data are derived from experimental measurements, theoretical considerations, or as a compilation from other sources), the form and amount of data, etc. An index according to property, subindexed for temperature and pressure ranges, and an author index are included. Author

N63-14923 American Cyanamid Co., Stamford, Conn

BIBLIOGRAPHY OF VACUUM ULTRAVIOLET SPECTROSCOPY [Final Report, July 1960-Oct. 1962]

Robert C. Hirt and Richard G. Schmitt Wright-Patterson AFB, Ohio, Directorate of Materials and Processes, Feb 1963 49 p 1328 refs
(Contract AF 33(616)-7958)
(ASD-TDR-62-915)

The bibliography is arranged alphabetically by senior author, with a four-letter code (called CODEN) for the journal reference. The format and presentation are suited for easy punching onto IBM punched cards for machine sorting. A subject index is provided to the more than 1300 references. Author

N63-14957 Lockheed Missiles and Space Co., Sunnyvale, Calif.
COMPOSITE MATERIALS: AN ANNOTATED BIBLIOGRAPHY

Helen M. Abbott, comp. Feb. 1963 94 p 190 refs
(SB-62-58)

This is an annotated bibliography of 190 selected references pertaining to composite materials. Material composites are broadly considered as physical combinations of two or more dissimilar materials. Boron carbide impregnated with aluminum (Boral), metal fibers in glass or plastics, or glass fibers in aluminum are examples of some of the various combinations that are being studied. Author

N63-14982 Lockheed Missiles and Space Co., Sunnyvale, Calif.

ERROR PROPAGATION IN AEROSPACE SYSTEMS: A SELECTIVE ANNOTATED BIBLIOGRAPHY

J. L. Burroughs, E. E. Graziano, and W. W. Happ (comps.) Oct 1962 88 p 226 refs
(SB-62-50)

The error propagation problem can be approached by present mathematical techniques in several ways. Some of the more commonly used approaches to this problem are: (1) to treat uncertain variables as normally distributed random variables, and to find the distribution of system performance variables by linear perturbation techniques; (2) to treat uncertain variables as non-normally distributed random variables, and to find the distribution of system-performance variables by the use of change of variable techniques, probabilistic algebra, or high-order perturbation techniques; (3) to treat uncertain signals and parameters as variables which are constrained to satisfy a set of equalities and inequalities, and to find the bounds on the errors of system-performance variables by mathematical (linear and nonlinear) programming techniques; and (4) to simulate uncertain variables and system dynamics on a computer so that the distributions of system-performance variables can be obtained by Monte Carlo techniques. The advantages and limitations of these and other methods of analyzing system accuracy, as well as examples of their application to specific aerospace systems, are treated in the references which are contained in this selected bibliography. Author

N63-15099 Lockheed-Georgia Co. Scientific and Technical Information Dept., Marietta

BIBLIOGRAPHY ON AERONAUTICAL WEIGHT ESTIMATION AND CONTROL [1957-MAY 1962]

C. D. Rife comp. June 20, 1962 15 p 139 refs

This bibliography on aircraft weight control covers the following: estimations, materials, general design, electrical system

design, hydraulic system design, structural design, mathematics, and lightweight components R C M

N63-15161 Stanford Research Inst., Menlo Park, Calif.
A BIBLIOGRAPHY OF BINARY I-VII COMPOUND, VOLUME I
Scientific Report No. 2

W J. Fredericks, F J. Keneshea, Jr., and F. Craig [1962] 145 p
 1352 refs. For Vol. II see N63-15162 11-25, for Vol. III see N63-15163 11-25, and for Vol. IV see N63-15164 11-25
 (Contract AF 19(604)-7231)
 (AFCRL-62-917(II))

This report provides a 1946 to 1961 bibliography of solid-state research on I-VII compounds. The entries are listed under compound and subject. An author index is also included. Author

N63-15162 Stanford Research Inst., Menlo Park, Calif.
A BIBLIOGRAPHY OF GROUP II-VI COMPOUNDS, VOLUME II
Scientific Report No. 2

W J. Fredericks, F J. Keneshea, Jr., and F. Craig [1962] 126 p
 1010 refs. For Vol. I see N63-15161 11-25, for Vol. III see N63-15163 11-25, and for Vol. IV see N63-15164 11-25
 (Contract AF 19(604)-7231)
 (AFCRL-62-917 (II))

This report provides a convenient 1946 to 1961 bibliography of research on II-VI compounds. The entries are listed under compound and subject. Author

N63-15163 Stanford Research Inst., Menlo Park, Calif.
A BIBLIOGRAPHY OF GROUP III-V COMPOUNDS, VOLUME III
Scientific Report No. 2

W J. Fredericks, F J. Keneshea, Jr., and F. Craig [1962] 66 p
 565 refs. For Vol. I see N63-15161 11-25, for Vol. II see N63-15162 11-25, and for Vol. IV see N63-15164 11-25
 (Contract AF 19(604)-7231)
 (AFCRL-62-917(III))

This report provides a convenient 1946 to 1961 bibliography of research on III-V compounds. The entries are listed under compound and subject. Author

N63-15164 Stanford Research Inst., Menlo Park, Calif.
A BIBLIOGRAPHY OF GROUP IV ELEMENTS AND THEIR COMPOUNDS, VOLUME IV
Scientific Report No. 2

W J. Fredericks, F J. Keneshea, Jr., and F. Craig [1962] 196 p
 1784 refs. For Vol. I see N63-15161 11-25, for Vol. II see N63-15162 11-25, and for Vol. III see N63-15163 11-25
 (Contract AF 19(604)-7231)
 (AFCRL-62-917(IV))

This report provides a convenient 1946 to 1961 bibliography of research on Group IV elements and their compounds. The entries are listed under element and subject. Author

N63-15258 Library of Congress, Science and Technology Div.
 Washington, D C

AEROSPACE MEDICINE AND BIOLOGY, AN ANNOTATED BIBLIOGRAPHY, 1957 LITERATURE, VOLUME VI

Arnold J. Jacobus, Roman Kenk, Leroy D. Davis, Elizabeth G. Komes, Kristallo Pappajohn, Ilga M. Terauds, and Paul E. Spiegler
 1963 364 p 1566 refs. For Vol. IV see N63 90035. For Vol. V see N62 10854 03 16

(Supported by NASA, AF, and FAA)
 OTS \$5.00

Included in this bibliography on *Aerospace Medicine and Biology* are: Physiology, Space Biology, Psychology, Pharmacology, Toxicology, Safety, Survival, and Rescue. J A J

N63-15479 Lockheed Missiles and Space Co., Sunnyvale, Calif.
COLD WELDING IN A VACUUM: AN ANNOTATED BIBLIOGRAPHY

Scott J. Buginas, comp. Mar. 1963 24 p 44 refs
 (SB-63-5)

This bibliography includes references issued primarily during the years 1959-1962. References are in alphabetical order by author's name. Author

N63-15733 RAND Corp., Santa Monica, Calif.
NETWORK-TYPE MANAGEMENT CONTROL SYSTEMS BIBLIOGRAPHY

B. L. Fry Feb. 1963 204 p 417 refs

(Contract AF 49(638)-700; Proj. RAND)
 (RM-3074-PR)

This bibliography contains listings of documents indexed by title and author and covering the literature on network-type management control systems. R C M

N63-15752 Lockheed Missiles and Space Co., Sunnyvale, Calif.
NONLINEAR ORDINARY DIFFERENTIAL EQUATIONS; AN ANNOTATED BIBLIOGRAPHY

George R. Evans, comp. Mar. 1963 115 p 176 refs
 SB-62-54

The primary area of interest is the existence and uniqueness of solution to ordinary differential equations for the following two classes of problems: (1) initial-value problems, and (2) boundary value problems. Also included are actual construction of solutions. Excluded are stability of solutions and equations with periodic solutions, or equations with periodic coefficients. Arrangement is chronological and the period covered is 1949 to October 1962. Author

N63-15801 AMP, Inc., Harrisburg, Pa.
BIBLIOGRAPHY ON THERMOELECTRIC EFFECTS AND AUTHOR INDEX

E. B. Chapman, comp. June 13 1960 196 p 530 refs

N63-15927 International Union of Pure and Applied Chemistry
BIBLIOGRAPHY ON THE HIGH TEMPERATURE CHEMISTRY AND PHYSICS OF MATERIALS IN THE CONDENSED STATE, NUMBER 1, JANUARY, FEBRUARY, MARCH 1963

J. J. Diamond (Natl. Bureau of Standards), ed. [1963] 60 p
 636 refs

N63-15928 International Union of Pure and Applied Chemistry
BIBLIOGRAPHY ON THE HIGH TEMPERATURE CHEMISTRY AND PHYSICS OF GASES AND GAS-CONDENSED PHASE REACTIONS

L. Brewer (Calif. U.), comp. Mar. 31, 1963 20 p 160 refs

N63-15966 Aerospace Medical Div., Aerospace Medical Research Labs. (6750th), Wright-Patterson AFB, Ohio

A BIBLIOGRAPHY OF REPORTS ISSUED BY THE BEHAVIORAL SCIENCES LABORATORY: ENGINEERING PSYCHOLOGY, TRAINING PSYCHOLOGY, ENVIRONMENTAL STRESS, SIMULATION TECHNIQUES, AND PHYSICAL ANTHROPOLOGY, 1946-1962

L. Jean Thomas, comp. Mar. 1963 115 p 907 refs

N63-16122 Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena
ASTRONAUTICS INFORMATION, EFFECTS OF STERILIZING AGENTS ON MICROORGANISMS

Janet Swift, comp. Mar. 1963 74 p 420 refs
 (NASA Contract NAS7-100)
 (JPLAI/LS-260, Suppl.) OTS: \$7.60 ph, \$2.42 mf

This supplementary compilation of abstracts on sterilization of microorganisms places special emphasis on chemical sterilizing agents. The chemical agents of particular interest are ethylene oxide, β -propiolactone, propylene oxide, and ozone B J C

N63-16144 California U., Livermore. Lawrence Radiation Lab.
ABSORPTION SPECTRA OF VARIOUS METALLIC HALIDES AND OXIDES, ELEMENTAL CARBON, AND THE INERT GASES: A BIBLIOGRAPHY

Jean E. Senkin and M. Temple Milliken, comps. Feb. 1, 1963. 94 p. 814 refs.
(Contract W-7405-eng-48)
(UCRL-7238) OTS: \$2.25

The bibliography is the result of a search of *Chemical Abstracts* (1927-1962) and includes references to data on absorption spectra of various hydrides, halides and oxides of alkali, alkaline earth, and several transition elements. Also included are references on spectra of elemental carbon and the inert gases. Author

N63-16146 Atomic Energy Commission, Bombay (India)
SELECTED BIBLIOGRAPHY OF OXIDES OF CADMIUM
V. D. Damani, comp. 1962. 46 p. 277 refs.
(AECT/CD/11)

N63-16220 Lockheed Missiles and Space Co., Sunnyvale, Calif.
PRINTED CIRCUITS AND WELDED MODULES: AN ANNOTATED BIBLIOGRAPHY (1962)

J. B. Goldmann, comp. May 1963. 82 p. 203 refs.
(SB-63-17)

This bibliography is a continuation of SB-62-5. *Printed Circuits and Welded Modules: An Annotated Bibliography*, April 1962. Microminaturization of circuits and components as it is applied to manufacturing research, design standards and procedures, production methods and techniques and applications of the fabricated items were the subjects for which information was sought. This volume includes printed materials which were released during 1962. Author

N63-16247 Armed Services Technical Information Agency, Arlington, Va.

SCIENTIFIC SATELLITES Report Bibliography

Sara Bjorge, comp. Dec. 1962. 29 p. 120 refs. Prepared for the American Astronautical Soc. Scientific Satellite Symp., Dec. 27, 1962.
(AD-290800)

This is a bibliography which covers the design and instrumentation of scientific satellites, properties of the ionosphere derived from satellite research, and meteorological satellites. Author

N63-16275 Lockheed Missiles and Space Co., Palo Alto, Calif.
METEOROIDS AS A POSSIBLE HAZARD TO SPACE VEHICLE OPERATIONS: AN ANNOTATED BIBLIOGRAPHY, 1956-1962

Charles G. Gros, comp. May 1963. 44 p. 96 refs.
(Contract AF 04(647)-787)
(SB-63-1)

This work treats of meteoroids as a possible hazard to space-vehicle operations. Citations to meteors and other interplanetary debris have been included when the material was of relevance to meteoroids as well. Citations to combined environmental parameters affecting the reliability of space vehicles in flight have also been included when meteoroids constituted one of the parameters. The period covered is from 1956 through 1962, with a few earlier citations. Author

N63-16285 Aerospace Medical Div. Aerospace Medical Research Labs. (6570th), Wright-Patterson AFB, Ohio

A BIBLIOGRAPHY OF THE EFFECTS OF TEMPERATURE ON HUMAN PERFORMANCE [Final Report]

John Wing and Robert M. Touchstone. Feb. 1963. 24 p. 162 refs.
(AMRL-TDR-63-13) OTS: \$0.75

This bibliography lists technical reports and journal articles dealing with human performance under both high and low ambient temperatures. The articles and reports have been grouped into sections covering five major performance areas: (1) Sensory Thresholds and Simple Reaction Time, (2) Attention and Perception, (3) Psychomotor Performance, (4) Heavy or Prolonged Physical Work, and (5) Mental Performance. A sixth section of the bibliography lists references which review portions of the literature. Author

N63-16329 Lockheed Missiles and Space Co., Sunnyvale, Calif.
SHIELDING: AN ANNOTATED BIBLIOGRAPHY

William L. Hollister, comp. Feb. 1962. 171 p. 338 refs.
(Contract AF 04(647)-840)
(SB-62-2, AD 274015)

The following bibliography was compiled in connection with a study of radiation hazards upon the lunar surface. The bibliography includes works on the subject of reactor shielding, both on land and in nuclear-powered space vehicles, and shielding against trapped radiation belts, cosmic rays, and solar flares. Both theoretical and empirical studies are included. Author

N63-16334 North American Aviation, Inc., Columbus, Ohio
HIGH ENERGY RATE METAL WORKING BIBLIOGRAPHY Final Report, Jan. 1, 1960-Jan. 1, 1962

Daniel E. Strohecker. Jan. 15, 1962. 235 p. 478 refs.
(NA62H-46)

This final report is a bibliography with abstracts of articles on, and related to, high-energy rate metal working, and covers the survey work performed over the period from 1 January 1960 to 1 January 1962. The subjects and categories covered in this bibliography are: (1) Safety, (2) Energy Sources, (3) Energy Transfer Mediums, (4) Facilities and Equipment, (5) High-Energy Rate Forming, (6) High-Energy Rate Machining, (7) Theory of High-Energy Rate Phenomenon, (8) High-Energy Rate Welding, and (9) Work Hardening by High-Energy Rate Methods. Author

N63-16345 Lockheed Missiles and Space Co., Sunnyvale, Calif.
BERYLLIUM: AN ANNOTATED BIBLIOGRAPHY, JULY-SEPTEMBER 1962-SUPPLEMENT II

Jack B. Goldmann. Apr. 1963. 62 p. 140 refs.
(Contract NOrd-17017)
(Special Bibl. SB-62-22, Suppl. II)

The annotated bibliography covers publications released during the third quarter of 1962. Citations are arranged alphabetically by author under the broad subject headings of Alloys, Analysis, Applications, Bibliographies, Compounds, Corrosion, Fabrication Techniques, Joining, Mineralogy, Oxides, Powder Metallurgy and Casting, Processing, Properties, and Miscellaneous. Author

N63-16369 Martin-Marietta Co., Space Systems Div., Baltimore, Md.

A CHRONOLOGICAL BIBLIOGRAPHY ON THE BIOLOGICAL EFFECTS OF IMPACT [1876-1961]

Carl C. Clark, Denis Faubert, and Bruce Cooper. May 1962. 169 p. 1147 refs.
(Martin Eng. Rept. 11953 (Rev. I))

N63-16379 Gt. Brit. Ministry of Aviation. Technical Information and Library Services, Nottingham
LASERS: A BIBLIOGRAPHY COVERING THE PERIOD DECEMBER 1958-MAY 1962
 K. J. Spencer May 1962 41 p 409 refs
 (Its Bibliographical Series No. 4)

An annotated bibliography on lasers is presented, covering the period December 1958 to May 1962. D.M.B.

N63-16421 Lockheed Missiles and Space Co., Sunnyvale, Calif
THE DETAILED COMPOSITION OF FECES, SWEAT, AND URINE: AN ANNOTATED BIBLIOGRAPHY
 Charles M. Pierce comp. Mar. 1962 225 p 598 refs
 (Special Bibl. SB 62-56)

The increased importance of closed-cycle life-support systems has produced a need for accumulating information on byproducts of human metabolism. This publication consists of 598 references covering the composition of feces, sweat, and urine. Topics which are discussed include methods of analysis, the constancy at which the formed or waste products are created, and the relative influence exerted thereon by diet, climate, body activity, and stress. Most of the references were published between January 1957 and June 1962. Author

N63-16466 Martin Co. Space Systems Div., Baltimore, Md
TERMINOLOGY, BIBLIOGRAPHY AND INFORMATION UTILIZATION PROBLEMS IN AEROSPACE BIOPHYSICS
 Carl Clark Apr. 1963 9 p 10 refs Presented at the Symp. on Chem. Lit. of Space Tech., Natl. Meeting of the Amer. Chem. Soc., Los Angeles, Apr. 1, 1963
 (ER 12923)

Discussions on certain information utilization problems in manned spaceflight include: (1) the need for information processing computers, (2) the further development of language or terminology adaptable to computer utilization, and (3) the development of instrumentation with associated computer memory for data sorting, processing, and reduction. I v L

N63-16526 Lockheed Missiles and Space Co., Sunnyvale, Calif
RADIATION EFFECTS ON SPACECRAFT ELECTRONICS SYSTEMS, COMPONENTS AND MATERIALS: AN ANNOTATED BIBLIOGRAPHY [JANUARY-JULY 1962]
 Helen B. McCormick, comp. Dec. 1962 175 p 415 refs
 (SB-62-46)

N63-16797 National Physical Lab., Aerodynamics Div., Teddington, (Gt. Brit.)
N. P. L. AEROFOIL CATALOGUE AND BIBLIOGRAPHY
 R. C. Pankhurst London, Ministry of Aviation Mar. 1962 25 p 136 refs
 (NPL R&M-3311) HMSO: 10s

This report catalogs airfoils which have been designed (or substantially modified) at the N. P. L., and which have been the subject of theoretical investigations, aircraft design studies, or wind-tunnel tests. A full bibliography is included. Author

N63-16847 National Research Council, Nuclear Data Group, Washington, D.C.
NUCLEAR THEORY REFERENCE BOOK FOR 1959 AND 1960. COMPILATION OF NUCLEAR THEORY INDEX CARDS
 J. B. Marion (Maryland U.) and R. Nakasima, eds. P. Marmier and E. Sheldon (Eid-Onderzoek) Apr. 1963 158 p 1415 refs
 (Supported by AEC)
 GPO: \$1.00

This guide to theoretical papers on nuclear-structure physics covers nuclear models, nuclear properties, nuclear reactions, electromagnetic radiation, beta decay and parity, and alpha decay. Previous volumes were issued on cards rather than in book form. J.A.J.

N63-17029 Lockheed Missiles and Space Co., Sunnyvale, Calif
TRANSITION FROM LAMINAR TO TURBULENT FLOW AT HYPERSONIC SPEEDS: AN ANNOTATED BIBLIOGRAPHY
 Eugene E. Graziano, comp. Dec. 1962 25 p 52 refs
 (SB-62-55)

Experimental data on transition from laminar to turbulent flow at hypersonic speeds are by no means complete, nor does there exist a unified analytical theory to account for all aspects of this phenomenon. This bibliography represents an attempt to bring together significant reports on work in this area. The period searched was from 1947 to August 1962. Author

N63-17086 Lockheed Missiles and Space Co., Sunnyvale, Calif
ANTENNA SIDE LOBE REDUCTION: AN ANNOTATED BIBLIOGRAPHY [1958-MAY 1962]
 George R. Evans, comp. May 1962 97 p 189 refs
 (Contract AF 04(647)-788)
 (Rept. 3-77-62-13 SB 62-17)

One of the important aspects of antenna design is to obtain the desired width of the main beam while suppressing unwanted side lobes. Design information of various types of antennas is included in this compilation, along with radiation-pattern analysis. Author

N63-17087 Lockheed Missiles and Space Co., Sunnyvale, Calif
DESIGN AND APPLICATIONS OF MODULAR PACKAGING OF EQUIPMENT: AN ANNOTATED BIBLIOGRAPHY
 George R. Evans, comp. May 1962 33 p 49 refs
 (Contract AF 04(647)-787)
 (Rept. 3-77-62-1 SB 62-25)

The subject areas surveyed include rack design and housing for independent functional equipment, with stress on optimum reliability and maintainability along with efficient space utilization. Units or components which comprise the electronic, electrical and mechanical circuitry, and functional capability of equipment, systems, etc., are considered. Author

N63-17088 Lockheed Missiles and Space Co., Sunnyvale, Calif
ATTITUDE CONTROL SYSTEMS: AN ANNOTATED BIBLIOGRAPHY [1957-MAY 1962]
 Helen M. Abbott, comp. Aug. 1962 69 p 155 refs
 (Contract AF 04(647)-787)
 (Rept. 3-77-62-20 SB 62-26)

This bibliography contains 155 selected references pertaining to attitude control systems of satellites. Information gained from these references presented state-of-the-art capabilities in the area of stabilization of earth satellites. Author

N63-17089 Lockheed Missiles and Space Co., Sunnyvale, Calif
ACTIVE THERMAL CONTROL OF SPACECRAFT SURFACES: AN ANNOTATED BIBLIOGRAPHY [1959-1962]
 H. M. Abbott, comp. Sept. 1962 21 p 46 refs
 (Rept. 8-17-62-1 SB 62-30)

This bibliography contains 46 selected references pertaining to information on active thermal control of spacecraft surfaces. Active controls have moving parts such as heaters.

louvers, shutters, discs that turn, and cylinders that rotate the vehicle to change its exposure to the sun, earth, etc. Also included are references that make a comparison between active and passive thermal-control performance

Author

N63-17447 Lockheed Missiles and Space Co., Sunnyvale, Calif.

AUTOMATIC PATTERN RECOGNITION DURING THE PERIOD 1961-1962: AN ANNOTATED BIBLIOGRAPHY

Eugene E. Graziano, comp. May 1963 44 p 140 refs (SB-63-13)

One hundred and forty references are given on all aspects of automatic pattern recognition for the period 1961-1962. Included are references pertaining to theory and experience with systems, components, methods, optics, speech, etc. The period covered in the search was January 1961-December 1962

Author

N63-17509 Lincoln Lab., Mass. Inst. of Tech., Lexington
RADAR ASTRONOMY 14th Reference Bibliography [Period covered, 1946-Aug. 1962]

Jean E. Britton and Paul E. Green, Jr. Dec. 31, 1962 18 p 151 refs

(Contract AF 19(628)-500)

(AD-294683, MIT-H-462) Available LL: \$4 15

A bibliography of radar investigations of astronomical problems, excluding topics within the earth's environment, is presented. It includes theoretical articles as well as those giving experimental data and descriptions of equipment. The period from 1946 to August 1962 is covered. No abstracts are included.

M.P.G.

N63-17569 California U., Livermore Lawrence Radiation Lab

SOME PHYSICAL, MECHANICAL, AND THERMODYNAMIC PROPERTIES OF TRANSITION METAL REFRACTORY CARBIDES: A BIBLIOGRAPHY

Jean E. Senkin and M. Temple Milliken, comps. Mar. 1963 196 p 1072 refs

(Contract W-7405-eng-48)

(UCRL-7284) OTS \$2 75

This bibliography is a collection of references on the subject of properties of refractory carbides. Emphasis is placed upon references concerning the mechanical, physical, and thermodynamic properties of the carbides of Ti, V, Cr, Mo, and W. Also included are the carbides of Hf, Ta, Zr, and Nb

Author

N63-17631 Lincoln Lab., Mass. Inst. of Tech., Lexington
SOVIET BOOKS ON RADIOTECHNOLOGY AND ELECTRONICS IN 1962 13th Reference Bibliography

G. S. Lantsberg Sept. 4, 1962 46 p 197 refs. Transl. from Radiotekh. i Elektron. (Moscow) v. 7, no. 4, 1962 p 723-744 (Contract AF 19(628)-500)

N63-17632 Lincoln Lab., Mass. Inst. of Tech., Lexington
RADOMES, PART I, 15th Reference Bibliography [Period Covering 1952-Oct. 1962]

Teris Weinberger and Joseph F. Orabona Jan. 30, 1963 57 p 332 refs

(Contract AF 19(628)-500)

This bibliography covers the literature on both ground and airborne radomes from 1952 to October 1962. It is published in two parts: Part I contains the unclassified literature, and Part II consists of the classified material. The aspects of the radome field covered by this bibliography include theory, design, and experimental data and analyses of radome structures.

Author

N63-17636 Lockheed Missiles and Space Co., Sunnyvale, Calif.

PYROLYTIC GRAPHITE AND RELATED REFRACTORY MATERIALS: AN ANNOTATED BIBLIOGRAPHY [Period Covered, July 1961-June 1962]

Jack B. Goldmann, comp. Sept. 1962 62 p 124 refs

(SB-62-27; Rept. 3-80-62-16)

A survey of printed sources which refer to pyrolytic graphite and related refractory materials was made for the period July 1961 to June 1962. This annotated bibliography includes references to pyrolytic boride, pyrolytic carbide and pyrolytic carbon, as well as pyrographite. Other areas for investigation were tantalum boride, silicon, tantalum, titanium and zirconium carbide, and boron and titanium nitride.

Author

N63-17637 Lockheed Missiles and Space Co., Sunnyvale, Calif.

POST-BUCKLING BEHAVIOR OF STIFFENED CYLINDERS AND CURVED PANELS: AN ANNOTATED BIBLIOGRAPHY [Period Covered, 1950-June 1962]

Charlie M. Pierce comp. Sept. 1962 16 p 42 refs

(SB-62-37; Rept. 3-77-62-22)

Methods of evaluating the stability of stiffened panels and shells are of great importance in situations where a high-strength-to-low-weight ratio must be maintained. The 42 references which have been selected on this topic were chosen with emphasis on the estimation of postbuckling tendencies of stiffened structures.

Author

N63-17638 Lockheed Missiles and Space Co., Sunnyvale, Calif.

PLASMA PROPULSION: AN ANNOTATED BIBLIOGRAPHY

Robert C. Gex, comp. Apr. 1962 70 p 161 refs

(SB-62-20; Rept. 6-90-62-34)

The scope of this search includes available literature published in the last 5 years on proposed plasma propulsion systems or devices. Emphasis was placed on review articles and reports of experimental work.

Author

N63-17639 Lockheed Missiles and Space Co., Sunnyvale, Calif.

MISSILE PHENOMENOLOGY: AN ANNOTATED BIBLIOGRAPHY

George R. Evans, comp. Aug. 15, 1962 96 p 213 refs

(Contract NORd-17017)

(SB-61-68; Rept. 3-80-61-43)

The references cited reflect an attempt to collect information on the natural and induced environment of a missile in midcourse flight and in reentry. Therefore, while information on the missile in the exosphere and ionosphere is included, the launch phase has been excluded.

Author

N63-17640 Lockheed Missiles and Space Co., Sunnyvale, Calif.

RADIATION DISCRIMINATORS: AN ANNOTATED BIBLIOGRAPHY

Charlie M. Pierce, comp. Oct. 1962 27 p 57 refs

(SB-62-34; Rept. 3-80-62-23)

The scope of this search involves instrumentation and circuitry which have been designed to discriminate between the various types of nuclear radiations. A majority of the selected references describe techniques for measuring the intensity of a particular type of radiation in a mixed radiation field.

Author

N63-17641 Lockheed Missiles and Space Co., Sunnyvale, Calif.

ELECTROMAGNETIC INTERFERENCE: AN ANNOTATED BIBLIOGRAPHY

P. R. Stromer, comp. Nov. 1962 120 p 252 refs

(SB-62-44; Rept. 3-35-62-7)

This bibliography up dates and supplements the Bibliography on Radio Frequency Interference by C. E. Blakely, *et al* in the IRE Transactions on Radio-Frequency Interference, vol. RFI-4, no. 1, Feb. 1962. Natural radio noise, atmospheric, etc., have been limited to those references relating to space-communications interference. Author

N63-17715 Battelle Memorial Inst. Radiation Effects Information Center, Columbus, Ohio

A SELECTED BIBLIOGRAPHY OF PULSED RADIATION EFFECTS

W. H. Veazie and S. F. Collier, comps. June 1, 1963 32 p 261 refs
(Contract AF 33(657)-10085)
(REIC Memo 24)

N63-17753 Lockheed Missiles and Space Co., Sunnyvale, Calif.

HIGH-VACUUM EFFECTS ON ELECTRONIC PARTS, MATERIALS, AND RELATED PROBLEMS: AN ANNOTATED BIBLIOGRAPHY [Covering Period Jan. 1960-Mar. 1962]

Eugene E. Graziano, comp. Apr. 1962 67 p 124 refs
(Contract AF 04(647)-787)
(SB-62-15, Rept 3-77-62-12)

The purpose of this literature search was to secure technical information regarding experience with electronic parts and materials in high-vacuum environments. Due to the relative sparseness of such information, the scope of the search was extended to include selected references on sublimation, vapor pressures, electronic phenomena in high vacuum, etc. An intensive search was made for the period January 1960-March 1962, and selected references were included to earlier materials if citations were made to these earlier articles in the current literature. Author

N63-17950 Avco Everett Research Lab., Everett, Mass.
MAGNETOHYDRODYNAMIC POWER GENERATION, A BIBLIOGRAPHY

Barbara A. Spence, comp. June 1963 40 p 399 refs
(AMP-110)

N63-18002 Lockheed Missiles and Space Co., Sunnyvale, Calif.

THERMODYNAMIC PROPERTIES OF MOLYBDENUM AND COLUMBIUM: AN ANNOTATED BIBLIOGRAPHY [Period Covered, 1924-1962]

Jack B. Goldmann, comp. June 1963 80 p 184 refs
(SB-62-69, Rept 6-90-122)

The data which are included encompass heat of formation, activity, entropy, diffusion rates and diffusion constants. In addition, references to the research which has been done, and the tests and instrumentation are noted. The period covered by this bibliography is 1924-1962, with special emphasis on the literature published since 1955. Author

N63-18123 Lockheed Missiles and Space Co., Sunnyvale, Calif.

ALL-METAL SANDWICHES EXCEPT HONEYCOMB-CORE: AN ANNOTATED BIBLIOGRAPHY [Jan. 1956-Jan. 1962]

Eugene E. Graziano, comp. Mar. 1962 81 p 189 refs
(Contract AF 647 787)
(SB 62 8)

The purpose of this search was to discover existing literature relating to all metal sandwiches, except honeycomb core, published from 1 January 1956 to January 1962, that might be of interest in space vehicle and missile applications. Author

N63-18173 Federal Aviation Agency Office of Management Services, Washington, D. C.

COMMERCIAL SUPERSONIC TRANSPORT AIRCRAFT RESEARCH PROGRAM. SELECTED REFERENCES-BIBLIOGRAPHIC LIST NO. 8.

Apr. 1963 41 p 379 refs

N63-18212 Lockheed Missiles and Space Co., Sunnyvale, Calif.

AERODYNAMIC HEAT TRANSFER AND PRESSURE DISTRIBUTION ON BLUNT BODIES AT HYPERSONIC VELOCITIES: AN ANNOTATED BIBLIOGRAPHY [JANUARY 1947-OCTOBER 1962]

Eugene E. Graziano, comp. Dec. 1962 117 p 296 refs
(Contract N0W-63-0050-C)
(SB 62-61)

This bibliography consists of 296 references to sources that contain theoretical and/or experimental data on aerodynamic heat transfer and pressure distribution over blunt bodies at hypersonic speeds. Blunt bodies of all shapes are included. All types of fluids at velocities greater than Mach = 5 were of interest. Materials that otherwise fell within these parameters were excluded if they did not specifically deal with pressure distribution or heat transfer. Author

N63-18213 Lockheed Missiles and Space Co., Sunnyvale, Calif.

COMPOSITE MATERIALS: AN ANNOTATED BIBLIOGRAPHY, SUPPLEMENT I [SEPTEMBER 1962-JUNE 1963]

Helen M. Abbott, comp. June 1963 54 p 90 refs
(SB-63-49)

This annotated bibliography contains 90 selected references pertaining to composite materials. Spaceflight and supersonic aircraft have made great demands for composite materials that can be used for applications that require performance characteristics not obtainable with conventional materials. Author

N63-18251 Defense Metals Information Center, Battelle Memorial Inst., Columbus, Ohio

A GUIDE TO THE LITERATURE ON HIGH-VELOCITY METALWORKING

D. E. Strohecker and D. H. Owens, Dec. 3, 1962 250 p 829 refs
(Contract AF 33(616)-7747)
(DMIC-179, supersedes NA62H-46-ORD-241; AD-276693)

This report is a guide to the literature on high-velocity metalworking. It consists primarily of abstracts of articles, reports, books, and current research projects on and related to high-velocity metalworking, arranged according to technical subject. It covers a survey of the reported work in the field up to about October, 1962. Author

N63-18455 Air Force Systems Command, Foreign Technology Div., Wright-Patterson AFB, Ohio

BIBLIOGRAPHY

In its Soviet Satellites and Space Ships (Selected Articles)
Feb. 23, 1962 p 250-268 154 refs (See N63-18430 17-32)

This bibliography contains a list of selected articles summarizing Soviet artificial satellites and manned and unmanned space ships. Included are articles reviewing Soviet satellite observations, measurements, and photography of radiation intensity and density; particle impact and damage to materials, interplanetary gases; and magnetism in the upper atmosphere. Also included are articles of medical-biological experiments and investigations designed to determine the effect of space-flight conditions on the health of humans. N.E.A.

N63-18670 International Geophysical Year World Center A. National Academy of Sciences, Washington, D C.
UNITED STATES IGY BIBLIOGRAPHY 1953-1960. AN ANNOTATED BIBLIOGRAPHY OF UNITED STATES CONTRIBUTIONS TO THE IGY AND IGC (1957-1959)
 Frank M. Marson and Janet R. Turner, comps. (Library of Congress) Apr. 1963 301 p 2853 refs
 (Sponsored by National Sciences Foundation)
 (IGY Gen. Rept. Series 18; Publ. 1087) NAS: \$3.00

N63-18778 Air Force Systems Command, Kirtland AFB, N. Mex.
BIBLIOGRAPHY OF EXTRATERRESTRIAL RESEARCH
 Robert W. Henry June 1963 104 p 1504 refs
 (AFWL-RTD-TDR-63-3025)

This bibliography on extraterrestrial research is subdivided into the following categories: Astrobiology; Astronomy and Cosmology; Cratering Phenomena; Extraterrestrial Matter; Materials; Meteoritic Cratering; Moon (Atlases and Photography; Configuration, Experimental Research, Exploration and Basing Concepts; Lunar-Earth Phenomena; Lunar Trajectories; Surface Materials; and Topographical Features); Planets; Power Systems; Space Vehicles and Probes; Tektites; and Vacuum Environmental Simulation. Author

N63-18816 Oak Ridge National Lab., Tenn.
AN ANNOTATED BIBLIOGRAPHY ON THE EFFECTS OF RADIATION ON HETEROGENEOUSLY CATALYZED REACTIONS AND ON CHEMISORPTION
 N. A. Krohn July 17, 1963 70 p 259 refs
 (Contract W-7405 eng-26)
 (ORNL 3461) OTS \$1.75

This bibliography was compiled primarily from a search of *Chemical Abstracts*, *Nuclear Science Abstracts*, and *Dissertation Abstracts*, through December 1962. The annotations give the type of radiation, the catalysts investigated, and the test reactions used. The entries are cross referenced and indexes of the authors, catalysts, reactions, and type of radiation are provided. The compilation is limited to papers in which either heterogeneously catalyzed reactions, chemisorption, or the radiolysis of adsorbed substances was studied. Author

N63-18872 Lockheed Missiles and Space Co., Sunnyvale, Calif.
PHASE RELATIONSHIPS OF MOLYBDENUM, NIOBIUM AND TUNGSTEN BORIDES, CARBIDES AND SILICIDES: AN ANNOTATED BIBLIOGRAPHY
 Jack B. Goldmann, comp. May 1963 87 p 198 refs
 (SB-63-9; Rept. 6-90-63-10)

This annotated bibliography emphasizes phase relationships and their fabrication as evidenced in the physical properties, refractories, and powder metallurgy of molybdenum, niobium, and tungsten compounds which are formed with boron, carbon, and silicon. The period, 1955-1962, yielded the majority of references included in this bibliography. Author

N63-19023 Lockheed Missiles and Space Co., Sunnyvale, Calif.
EFFECTS OF WELD POOL AGITATION ON WELD PROPERTIES AND CHARACTERISTICS: AN ANNOTATED BIBLIOGRAPHY
 Scott J. Buginas, comp. May 1963 22 p 49 refs
 (SD-63-10)

The references cited were selected primarily from the literature of 1958-1962. It is significant to note that 65 percent of the references are to journals or books published by the Soviet Bloc. Pertinent papers on the influence of vibrations during the solidification of castings are included. Author

N63-19030 Defense Metals Information Center, Battelle Memorial Inst., Columbus, Ohio
LITERATURE SURVEY ON THE EFFECT OF SONIC AND ULTRASONIC VIBRATIONS IN CONTROLLING GRAIN SIZE DURING SOLIDIFICATION OF STEEL INGOTS WELDMENTS
 J. G. Jura and H. W. Mishler May 15, 1963 38 p 61 refs
 (Contract AF 33(616)-7747)
 (DMIC MEMO-166)

The state of the art of grain refinement of ferrous alloys by sonic and ultrasonic vibrations is reviewed. Author

N63-19084 Aerospace Information Div., Library of Congress, Washington, D C.
PLASMA SPECTROSCOPY - ANNOTATED BIBLIOGRAPHY [Mar. 1958 to Nov. 1962]
 July 8, 1963 44 p 112 refs
 (AID-B-63-93) OTS \$4.60 ph, \$1.52 mf

N63-19105 British Hydromechanics Research Assn., Harlow
SOME LITERATURE REFERENCES ON THE IMPACT OF LIQUID DROPS ON SOLID SURFACES
 Apr. 1963 7 p 29 refs
 (BIB-13)

This report presents literature references in the form of titles and abstracts on the impact of liquid drops on solid surfaces. A number of background references on drag, formation and break up, and photography are included. N. E. A.

N63-19311 Aerospace Information Div., Library of Congress, Washington, D C.
UNDERGROUND COMMUNICATIONS. ANNOTATED BIBLIOGRAPHY OF SOVIET-BLOCK LITERATURE FOR THE PERIOD 1960-1962
 July 26, 1963 22 p 54 refs
 (AID-B-63-99) OTS: \$2.60 ph, \$0.86 mf

N63-19354 Aerospace Information Div., Library of Congress, Washington, D C.
LUNAR DIMENSIONS. ANNOTATED BIBLIOGRAPHY OF SOVIET-BLOC LITERATURE, 1957-1963
 July 30, 1963 58 p 68 refs
 (AID Rept. B-63-100) OTS: \$5.60 ph, \$1.94 mf

N63-19436 Aerospace Medical Div., Wright-Patterson AFB, Ohio
 Aerospace Medical Research Labs. (6570th).
A BIBLIOGRAPHY OF REPORTS ISSUED BY THE BEHAVIORAL SCIENCES LABORATORY: ENGINEERING PSYCHOLOGY, TRAINING PSYCHOLOGY, ENVIRONMENTAL STRESS, SIMULATION TECHNIQUES AND PHYSICAL ANTHROPOLOGY [1945-1961]
 L. Jean Thomas, comp. June 1962 85 p 815 refs

N63-19444 Lockheed Missiles and Space Co., Sunnyvale, Calif.
METALWORKING APPLICATIONS OF LASERS: AN ANNOTATED BIBLIOGRAPHY
 Helen B. McCormick, comp. Feb. 1963 30 p 66 refs
 (Rept. 5-73-63 5; SB-63-22)

Applications of lasers in metalworking are reported here, with excerpts, summaries, and quotations pointing out the

most relevant information in the items reviewed. Metal working applications include welding, machining, piercing and drilling, melting and vaporizing, fabrication of refractory materials, and the microwelding and micromachining of fragile components and interconnections for electronics and optical communications uses. Measuring and gaging applications, high-speed photography, and high-temperature testing of materials characteristics are other likely applications mentioned. References are made also to safety precautions for laser use, and to components and equipment now available for experimental or shop use.

Author

N63-19514 Library of Congress, Washington, D. C.
Aerospace Information Div.
PHENOMENA IN THE UPPER ATMOSPHERE A Compilation of Abstracts

July 1, 1963 29 p 15 refs

(AID Rept P-63-87) OTS \$2 60 ph. \$1 07 mf

This compilation of Russian abstracts on phenomena in the upper atmosphere covers: (1) solar radiation and the ionosphere, (2) telluric currents, (3) atmospheric electricity, and (4) meteorology of the upper atmosphere

N E A

N63-19596 General Electric Co., Schenectady, N. Y.
Advanced Technology Labs.
STUDY OF DYNAMIC AND STATIC SEALS FOR LIQUID ROCKET ENGINES, VOLUME 3A: BIBLIOGRAPHY OF ASTIA LITERATURE ON SEALS Final Report, Feb. 26, 1962-Feb. 25, 1963

R. L. George and R. C. Elwell Mar. 29, 1963 230 p 682 refs
(NASA Contract NAS7-102)

(NASA CR-50661) OTS \$15 00 ph. \$7 10 mf

N63-19597 General Electric Co., Schenectady, N. Y.
Advanced Technology Labs.
STUDY OF DYNAMIC AND STATIC SEALS FOR LIQUID ROCKET ENGINES, VOLUME 3B: BIBLIOGRAPHY OF OPEN LITERATURE ON SEALS Final Report, Feb. 26, 1962-Feb. 25, 1963

R. L. George and R. C. Elwell Mar. 29, 1963 180 p 1482 refs
(NASA Contract NAS7-102)

(NASA CR-50660) OTS \$12 50 ph. \$5 60 mf

N63-19776 Lockheed Missiles and Space Co., Sunnyvale, Calif.
VIBRATIONS OF THIN SHELLS: A PARTIALLY ANNOTATED BIBLIOGRAPHY, 1957-MARCH 1963
Charles G. Gros and Kevin Forsberg Apr. 1963 103 p 215 refs
(Contract AF 04(695)-59)
(SB-63-43)

This work deals expressly with the vibration of thin shells. With the exception of the work on flutter, an attempt is made to provide as complete coverage as possible. Since much of the work on the flutter of cylindrical shells is concerned more with aerodynamics and fluid flow than with shell dynamics as such, only flutter material of general interest from the structural point of view has been cited. The 215 citations given cover the period from 1957 through March 1963.

Author

N63-20048 British Hydromechanics Research Assn., Harlow
A BIBLIOGRAPHY ON GEAR PUMPS AND MOTORS
May 1962 9 p 32 refs
(BIB-2)

N63-20049 British Hydromechanics Research Assn., Harlow
A BIBLIOGRAPHY ON CHEMICAL PUMPS
May 1962 8 p 27 refs
(BIB-3)

N63-20050 British Hydromechanics Research Assn., Harlow
A BIBLIOGRAPHY ON HYDROKINETIC POWER TRANSMISSION: FLUID COUPLINGS AND TORQUE CONVERTERS
July 1962 16 p 86 refs
(BIB-4)

N63-20051 British Hydromechanics Research Assn., Harlow
A BIBLIOGRAPHY ON THE FLOW CHARACTERISTICS OF NONCIRCULAR PIPES, DUCTS AND FITTINGS
Aug. 1962 16 p 53 refs
(BIB-7)

N63-20052 British Hydromechanics Research Assn., Harlow
SOME LITERATURE REFERENCES ON PRESSURE LOSSES IN BENDS, DIFFUSERS AND BEND DIFFUSER COMBINATIONS (INCLUDING BOUNDARY LAYER BEHAVIOUR)
Sept. 1962 22 p 67 refs
(BIB-7)

An annotated bibliography on pressure losses in bends, diffusers and bend diffuser combinations (including boundary layer behavior) is presented. References are arranged in chronological order, dating from 1931 to 1962

J L D

N63-20053 British Hydromechanics Research Assn., Harlow
SOME LITERATURE REFERENCES ON PRESSURE LOSSES IN BENDS, DIFFUSERS AND BEND-DIFFUSER COMBINATIONS (INCLUDING BOUNDARY LAYER BEHAVIOUR)
Jan. 1963 11 p 29 refs
(BIB-7(Suppl.))

A supplementary bibliography of pressure losses in bends, diffusers and bend-diffuser combinations (including boundary layer behavior) is given. References are arranged in chronological order, dating from 1927 to 1962

J L D

N63-20054 British Hydromechanics Research Assn., Harlow
A BIBLIOGRAPHY ON AXIAL- AND MIXED-FLOW MACHINES WITH PARTICULAR REFERENCE TO PUMPS
Nov. 1962 28 p 133 refs
(BIB-9)

N63-20056 British Hydromechanics Research Assn., Harlow
A BIBLIOGRAPHY ON SELF-PRIMING CENTRIFUGAL PUMPS AND PRIMING METHODS FOR CENTRIFUGAL PUMPS
Feb. 1963 9 p 37 refs
(BIB-11)

N63-20057 British Hydromechanics Research Assn., Harlow
A BIBLIOGRAPHY ON SIDE-CHANNEL PUMPS
Apr. 1963 5 p 19 refs
(BIB-12)

N63-20205 Aerospace Information Div., Washington, D. C.
LATTICE DYNAMICS. ANNOTATED BIBLIOGRAPHY OF SOVIET LITERATURE, 1962
Aug. 2, 1963 38 p 69 refs
(AID-B-63-101) OTS \$3 60 ph. \$1 34 mf

N63-20249 New Mexico U. Albuquerque Engineering Experiment Station

BIBLIOGRAPHY OF BACKSCATTER AND RELATED SUBJECTS

Donald H. Lenhart, Nasir Ahmed, W. W. Koepsel, and B. D. Warner June 1963 43 p 549 refs
(NASA Grant NsG-129-61)

(NASA CR-50856, EE-92) OTS \$4.60 ph. \$1.49 mf

Several major topic areas are included in this bibliography. These areas are (1) backscatter and radar return, (2) lunar surface properties, (3) acoustic instrumentation and simulation of radar return from terrain and geometrical shapes, and (4) correlation of radar and photographic data. A list of references which resulted from this research and the associated literature searches is compiled. Author

N63-20346 California U., Los Angeles School of Medicine Lab. of Nuclear Medicine and Radiation Biology

PHOTOGRAPHIC DOSIMETRY: AN ANNOTATED BIBLIOGRAPHY (SUPPLEMENT)

Ruth W. Brisbane and Louis B. Silverman, comps Aug 1963 258 p 1001 refs

(Contract AT(04-1)-GEN-12)

(UCLA-516) OTS \$3.50

This report is a list of 500 annotated references to unclassified report, book, and journal literature, both domestic and foreign, concerning the quantitative evaluation of radiation dosage by means of photographic materials. It contains references from 1959 to date, plus older references not included in an earlier report. Reports in the field of nuclear physics which contain information in the field of dosimetry are included, as are those concerning quantitative autoradiography. Cross-references to the reports listed in UCLA-446 are included. Author

N63-20513 Consiglio Nazionale delle Ricerche Rome (Italy) (Italy) Istituto Nazionale di Ultracustica O. M. Corbino

BIBLIOGRAPHY OF ULTRASONICS - 1958 [DOCUMENTAZIONE DI ULTRACUSTICA RELATIVA ALL'ANNO 1958]

[1962] 56 p 604 refs ITALIAN summary

N63-20514 Consiglio Nazionale delle Ricerche Rome (Italy) Istituto Nazionale di Ultracustica O. M. Corbino

BIBLIOGRAPHY OF ULTRASONICS - 1957 [DOCUMENTAZIONE DI ULTRACUSTICA RELATIVA ALL'ANNO 1957]

[1962] 52 p 551 refs ITALIAN summary

N63-21018 Atomic Energy Commission, Washington, D. C. REACTOR SAFETY. A LITERATURE SEARCH

Richard J. Smith comp Mar 1963 140 p 1910 refs

(TID 3525(Rev. 5)) OTS \$2.50

A total of 1906 references to unclassified reports and published literature is presented on reactor systems, materials, and operation, designed to provide maximum safety for the reactor, reactor personnel, and environs. Information is included concerning incidents and conditions of operation considered hazardous. Author, reactor, and report number indexes are provided. Author

N63-21174 Cornell Aeronautical Lab., Inc., Buffalo, N. Y.

INFORMATION PROCESSING RELEVANT TO MILITARY COMMAND: SURVEY, RECOMMENDATIONS AND BIBLIOGRAPHY Final Report

A. E. Murray and H. R. Leland L. G. Hanscom Field Bedford Mass. Electronic Systems Div. Feb 1963 154 p
(Contract AF 19(628) 1625)

(CAL ZF 1724 X 1 ESD TDR 63 349 Vol I)

The purpose of this report is to identify and recommend research topics in information processing most likely to yield valuable results. Conclusions are based on a survey of information processing methods relevant to military command and control and specifically the subject of heuristic programming, adaptive networks (e.g., perceptrons), artificial intelligence, pattern recognition, and information storage and retrieval. The survey consists of a comprehensive bibliography relying heavily upon other published collections, a set of original reviews of special topics, such as machine programming, and a discussion ending in recommendations for support of research in six specific subject areas. Author

N63-21197 North American Aviation, Inc., Downey, Calif. THE N-BODY PROBLEM: A SURVEY Annotated Bibliography [of International Literature, 1940-1960]

Feb 20, 1963 71 p 192 refs

(SID 63-157)

This report is an annotated bibliography of international literature, 1940-1960 on the n-body problem. Author

N63-21305 Lockheed Missiles and Space Co., Sunnyvale, Calif.

SPACE TRAVEL AND HUMAN THERMAL LIMITS: A SELECTED BIBLIOGRAPHY

Robert C. Gex, comp. Feb 1962 169 p 424 refs Addendum to Space Mater. Handbook

(Contract AF 04(647)-673)

(SB-61-33; AD 296343) OTS \$12.00

This selected bibliography, partially annotated, is divided as follows: (1) physiological mechanisms of temperature regulation; (2) metabolism; (3) thermal properties of tissues; (4) comfort criteria; (5) thermal indices and units; (6) compensable zone (high temperature); (7) compensable zone (low temperature); (8) hyperthermic zone (noncompensable); (9) hypothermic zone (noncompensable); (10) heat- and/or cold-resistant clothing, including ventilated pressure suits; (11) combined thermal and other stresses (hypoxia, acceleration, etc.); (12) acclimatization; (13) hibernation; and (14) thermal models of humans. The 424 references are listed alphabetically by author under each category. Emphasis was placed on the literature since 1957. Author

N63-21318 Lockheed Missiles and Space Co., Sunnyvale, Calif.

THE DIFFUSION OF HYDROGEN AND OTHER LIGHT GASES THROUGH MEMBRANES, POROUS MEDIA, AND THIN PLATES: AN ANNOTATED BIBLIOGRAPHY

Charlie M. Pierce comp Oct 1962 18 p 30 refs

(LMSC-6-90-63-31 SB-63-26)

This bibliography contains 30 selected references, dating from 1932, on the diffusion of light gases through porous and semiporous materials. Author

N63-21360 Lockheed Missiles and Space Co., Sunnyvale, Calif.

INSPECTING AND TESTING OF EMBEDDING MATERIALS AND COMPONENTS OF ELECTRICAL MODULES BEFORE

DURING, AND AFTER ASSEMBLY: A PARTIALLY ANNOTATED BIBLIOGRAPHY, 1950-JUNE 1962

Charlie M. Pierce, comp. Nov 1962 29 p 66 refs
(LMSC-3-80-62-28 SB-62-43)

N63-21386 Directorate of Materials and Processes, Wright-Patterson AFB, Ohio. Aeronautical Systems Div

AN INDEX TO METALS R&D PROGRAMS OF SEVEN AEROSPACE COMPANIES. Technical Memorandum Abstracts

George Young and Richard Klinger. Feb 11, 1963 297 p 235 refs

(ASRCE TM 62-24)

An index to aid in information retrieval on metals R&D programs of seven aerospace companies is presented. The index has four terms for classification: materials, properties, processes, and miscellaneous. There are 235 annotated abstracts describing the metals R&D programs of these companies. It has been recommended that an index be made for the nonmetals program. J L C

N63-21406 Argonne National Lab., Illinois

A REVIEW OF ULTRASONIC IMAGING METHODS, WITH A SELECTED, ANNOTATED BIBLIOGRAPHY

Harold Berger and R. E. Dickens. July 1963 32 p 73 refs
(Contract W-31-109-eng-38)

(ANL-6680)

This review includes a discussion of many methods for detecting ultrasonic images with emphasis upon the problems involved in a nondestructive inspection system employing ultrasonic imaging techniques. The detection methods are compared from the standpoint of threshold sensitivity. It is concluded that a system which will respond to an ultrasonic intensity of 10^{-3} w/cm² or less will probably be necessary for a practical nondestructive inspection system. The detection methods which meet this requirement include those classified in this report as optical and mechanical, and as electronic. The annotated bibliography includes 74 entries, many of which contain more than one reference. Included in this bibliography are references to most of the known methods for ultrasonic imaging. Author

N63-21461 Air Force Systems Command, Bedford, Mass. Decision Sciences Lab.

BIBLIOGRAPHY OF HUMAN FACTORS RESEARCH WITH ABSTRACTS, 1954-1962

J. P. Gonon, comp. Aug 1963 115 p 370 refs

(ESD-TDR-63-603)

The bibliography contains three indices, cross-referencing the reports by author, by organization, and by specialized categories: (1) Statistics, Measurements and Methods, (2) Psychophysical Research (Audition and Vision), (3) Perception and Cognition, (4) Learning and Training, (5) Group Processes, (6) Psycholinguistics, (7) Systems Research (Design and Analysis, Human Engineering, Personnel, Test and Evaluation, Training), (8) Bibliographies, Handbooks, and Indexes, and (9) Equipment. Author

N63-21477 International Union of Pure and Applied Chemistry

BIBLIOGRAPHY ON THE HIGH TEMPERATURE CHEMISTRY AND PHYSICS OF GASES AND GAS-CONDENSED PHASE REACTIONS

L. Brewer (Calif. U.) June 30, 1963 9 p 57 refs

(No 8)

Available from NBS, Wash., D C

Bibliographies are presented on: (1) reactions between gases and condensed phases and (2) spectroscopy of interest to high-temperature chemistry. I v L

N63-21479 Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena

ASTRONAUTICS INFORMATION, ENGINEERING EQUIPMENT AND PROCESSES ADAPTABLE TO LUNAR AND PLANETARY EXPLORATION

Dorothy I. Sweitzer, comp. May 1963 340 p 2705 refs

(NASA Contract NAS7-100)

(NASA CR 50966; JPL-AI/LS-464) OTS: \$19.75 ph. \$10.40 mf

A bibliography is given of catalog citations and abstracts on the subjects of general manipulators, roving vehicles and stationary structures, soil, vegetation, dust and particles, gas and liquid, inspection, testing, and analysis techniques, mechanisms for gripping, holding, hoisting, lowering, conveying, cutting, crushing, grinding, sweeping, and abrasive cleaning, mining equipment and techniques, machinery construction, remote, automatic, and adaptive control, and human time lag and human factors in control. J E T

N63-21543 International Union of Pure and Applied Chemistry

BIBLIOGRAPHY ON THE HIGH TEMPERATURE CHEMISTRY AND PHYSICS OF MATERIALS IN THE CONDENSED STATE; VOLUME 1963, NUMBER 2, APRIL-JUNE

J. J. Diamond, ed. (Natl. Bureau of Standards) 1963 50 p 512 refs

N63-21554 Martin Co., Baltimore, Md.

A REVIEW AND CHRONOLOGICAL BIBLIOGRAPHY ON THE BIOLOGICAL EFFECTS OF VIBRATION

Keith Mc Closkey and Carl Clark. Sept 1962 100 p 1411 refs
Draft of Chronological Index Only

(Martin-Baltimore Eng. Rept.-12576)

A draft copy of a chronological index to the biological effects of vibration is presented. Emphasis is placed on the biological effects of noise. I v L

N63-21806 Lockheed Missiles and Space Co., Sunnyvale, Calif.

SMALL ANGLE X-RAY SCATTERING: AN ANNOTATED BIBLIOGRAPHY

Jack B. Goldmann, comp. June 1962 73 p 163 refs

(LMSC-6-90-62-35; SRB-62-4)

This survey of literature pertaining to small angle and low angle X-ray scattering emphasizes studies of particle size and determination of surface areas. Author

N63-22090 Sandia Corp., Albuquerque, N. Mex.

SANDIA CORPORATION PAPERS ON RELIABILITY AND RELATED TOPICS

June 1959 Sept. 1963 14 p 99 refs

(SCR-99B) OTS: \$0.50

A bibliography is presented of Sandia Corporation papers relating to product reliability. I v L

N63-22103 Joint Publications Research Service, Washington, D.C.

BIBLIOGRAPHY OF WORKS ON RARE ALKALI METALS — USSR

K. A. Vlasov, ed., Sept. 23, 1963 38 p refs Transl. into ENGLISH of preface and Suppl. 1 and 2 of book "Redkiye sheh-elochnye metally (litiy, rubidiy tseziy)", Moscow, Izd. AN SSSR, 1962 p 3-6 and 260-267

(JPRS-21187; OTS-63-31812) OTS: \$1.00

A bibliography of literature for the period of 1935 to 1959 with emphasis on the 1945 to 1959 period is given. The present publication includes the rare alkali metals lithium, rubidium, and cesium, and should provide useful information for geologists, mineralogists, geochemists, and analysts with respect to materials on rare elements published in the USSR and foreign countries J E T

N63-22134 Douglas Aircraft Co., Inc., Santa Monica, Calif. Missile and Space Systems Div

BIBLIOGRAPHY ON BOUNDARY LAYER TRANSITION

Ralph E Deem Aug 23, 1963 18 p 117 refs

(Contract AF 33(657)-10660)

(SM-43059)

The documents are segregated into categories of reviews and correlations, theory, natural transition on flat plates, natural transition on bodies, general boundary-layer information, tripping, and flow visualization techniques. Author

N63-22155 Lockheed Missiles and Space Co., Sunnyvale, Calif.

THERMOCHROMISM AND PHOTOTROPISM: AN ANNOTATED BIBLIOGRAPHY

Helen M. Abbott, comp. Apr. 1963 54 p 151 refs

(Contract AF 33(657)-10107)

(LMSC-3-06-63-1; SB-63-41)

This annotated bibliography contains references to materials that exhibit the phenomena of thermochromism (reversible color change dependent on temperature) and phototropism (color change caused by exposure to light sources). Materials exhibiting these phenomena are of interest in the preparation of glass or transparent coatings that can darken when exposed to radiation sources and return to the original color when the light source is removed. Thermochromic coatings whose color is dependent on temperature can be used for thermal control of space satellites. Author

N63-22218 Atomic Energy Commission, Washington, D C Div. of Technical Information

ACTIVATION ANALYSIS — A LITERATURE SEARCH

Henry D. Raleigh, comp. Aug 1963 31 p 391 refs

(TID-3575) OTS: \$0.75

Selected references (391) on the use of radioactivation in the qualitative and quantitative analysis of materials are listed P V E

N63-22219 Atomic Energy Commission, Washington, D C Div. of Technical Information

MOLTEN SALTS: SELECTED REFERENCES

William E Bost, comp. Mar. 1963 36 p 415 refs

(TID-3564(Rev. 1)) OTS: \$0.75

These selected references on molten salts include 415 references to unclassified literature received since mid-1958. Report references, arranged by corporate source and by report number, comprise the first major section of this compilation. report-type translations, arranged by report numbers, form the second section, and a third section consists of a small number of miscellaneous journal references (journal name-arranged) and book and patent references (title-arranged). The final two sections consist of indexes to authors' names and report availability I v L

N63-22348 Aerospace Medical Div. Aerospace Medical Research Labs., (6570th), Wright-Patterson AFB, Ohio

BIBLIOGRAPHY OF RESEARCH REPORTS AND PUBLICATIONS ISSUED BY THE BIODYNAMICS AND BIONICS DIVISION

June 1963 52 p 451 refs

This bibliography includes publications on the following subjects: (1) sound sources and noise fields; (2) sound propagation; (3) instrumentation; (4) noise control—general; (5) noise-control structures; (6) hearing and the physiology of the ear; (7) speech; (8) the biological and physiological effects of noise and sound; (9) ear protection; (10) mechanical characteristics of the human body—effects of vibrations and shock; (11) general noise guides and criteria; and (12) bionics. I v L

N63-22576 Lockheed Missiles and Space Co., Sunnyvale, Calif.

EPITAXIAL GROWTH: AN ANNOTATED BIBLIOGRAPHY

Helen M. Abbott and James V. Kerrigan comp. Apr. 1963 77 p 169 refs

(LMSCSB-63-32)

This compilation contains 169 selected references and a preface on epitaxial crystal growth. Included are such factors as crystal growth and formation, vapor growth, twinning, and thin film processes. Author

N63-22582 Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena

ASTRONAUTICS INFORMATION. STRUCTURAL MODELING

Judith Hayes, comp. Mar. 1963 26 p 119 refs

(NASA Contract NAS7-100)

(NASA CR-51762; JPL Lit. Search 523) OTS: \$2.60 ph, \$0.98 mf

This literature-reference compilation is concerned with the construction of aircraft and spacecraft models for use in aeroelasticity tests. Abstracts are included for most of the references presented. I v L

N63-22685 General Dynamics/Astronautics, San Diego, Calif.

BIBLIOGRAPHY OF RESEARCH AND DEVELOPMENT REPORTS ON THE CENTAUR PROGRAM FOR SECOND QUARTER 1963

T. P. Peck Aug. 15, 1963 121 p

(NASA Contract NAS3-3232)

(NASA CR-51963; GD/A63-0079-A) OTS: \$10.10 ph, \$3.83 mf

A bibliography of research and development reports prepared by General Dynamics/Astronautics and its subcontractors on the Centaur Program is presented including those reports known to have been issued in the second quarter of 1963
J E T

N63-22702 General Dynamics/Astronautics, San Diego, Calif

BIBLIOGRAPHY OF RESEARCH AND DEVELOPMENT REPORTS ON THE CENTAUR PROGRAM FOR FIRST QUARTER 1963

T. P. Peck May 13, 1963 52 p

(NASA Contract NAS3-3232)

(NASA CR-51964, GD/A63-0079) OTS: \$5.60 ph, \$1.76 mf

A bibliography of research and development reports prepared by General Dynamics/Astronautics and its subcontractors on the Centaur Program is presented including those reports known to have been issued in the first quarter of 1963
J E T

N63-22728 Lockheed Missiles and Space Co., Sunnyvale, Calif

PLASMA JET WELDING, COATING, AND CUTTING: AN ANNOTATED BIBLIOGRAPHY

Scott J. Buginas, comp. Feb. 1963 24 p 68 refs

(SB-63-21)

The search was made in the literature of 1960 to 1962. News-release-type articles were included because of interest in manufacturing applications
Author

N63-22729 Lockheed Missiles and Space Co., Sunnyvale, Calif

EXPANDABLE STRUCTURES IN SPACE: AN ANNOTATED BIBLIOGRAPHY

George R. Evans, comp. Apr. 1963 35 p 57 refs

(Contract N0W 62-0363)

(SB-63-36)

Increasing interest has been centered on the employment in an aerospace environment of nonmetallic materials which can be expanded and rigidized. A state-of-the-art survey shows that structures such as spacecraft, guided missiles, and paragliders have been designed, using expandable or inflatable materials. Also included in the compilation, is information on expandable solar-energy collectors
Author

N63-22730 Lockheed Missiles and Space Co., Sunnyvale, Calif

SIZE FRACTIONATION: AN ANNOTATED BIBLIOGRAPHY

Jack B. Goldmann, comp. Apr. 1963 18 p 44 refs

(Contract N0W 60-0738-D)

(SB-63-40)

Size fractionation by elutriation technique (liquid and gas) is investigated in this annotated bibliography. Other methods of fractionation are included. Emphasis was placed upon the fractionation of ultrafine powders (range, 0.8 to 1.2 μ)
Author

N63-22751 U.S. Naval Research Lab., Washington, D.C.

DIRECT ENERGY CONVERSION LITERATURE ABSTRACTS

Eileen Pickenpaugh, comp. July 1963 183 p 4638 refs

OTS: \$3.00

A bibliography, with abstracts of each source, is presented of literature which is related to the direct conversion of energy.

Subjects covered are thermoelectricity, thermionic emission, photoelectric processes, energy storage, and energy sources, regulation and control, electrochemical processes, magnetohydrodynamics, and energy conversion.
C.L.W.

N63-22767 Lockheed Missiles and Space Co., Sunnyvale, Calif

SHOCK WAVE PROPAGATION IN SOLIDS: AN ANNOTATED BIBLIOGRAPHY

Peter R. Stromer, comp. Mar. 1963 64 p 132 refs

(Contract N0W-63-0050-C)

(SB-63-31)

A bibliography has been compiled on shock-wave propagation in solids. The effects of explosive blast waves and/or hypervelocity impact on plastic, viscoelastic, and elastoplastic solids have also been included. A detailed subject index is provided.
Author

N63-22771 North American Aviation, Inc., Downey, Calif. Space and Information Systems Div

SOLAR CELLS, AUXILIARY POWER SOURCES IN SPACE: TECHNICAL DOCUMENTATION, VOLUME III OF III

Nov. 1, 1962 128 p 525 refs

(SID 62-708)

A survey, through early 1962, is made of the literature on the solar cell. Because the silicon photovoltaic cell is the only type of solar cell in actual use at the present time, it has received the most thorough coverage. However, material on the photoemissive cell is also included, as are studies comparing solar cells with other possible energy sources. All aspects of the solar cell, from the underlying physical phenomena to the results of practical applications, are covered. Only Soviet-East European literature is excluded.
Author

N63-22772 North American Aviation, Inc., Downey, Calif. Space and Information Systems Div

GROUND ANTENNA FEEDS FOR SPACE COMMUNICATION A Selective Bibliography

Jan. 22, 1963 57 p 138 refs

(SID-63-60)

This bibliography covers the recent report and journal literature on ground-antenna feeds for space communication, with particular attention being given to Cassegrainian, conical and log periodic antennas. Material covered is mainly from 1960 forward, although some earlier significant references have been included.
Author

N63-22774 Space Technology Labs., Inc., Redondo Beach, Calif.

MASERS AND LASERS: A BIBLIOGRAPHY 1962 Supplement

J. F. Price and A. K. Dunlap Mar. 1963 182 p 1134 refs

Suppl. to N62-16763 17-21

(Research Bibliography 45; Rept. 9990-6369-KU2000)

This bibliography consists of 1134 references on masers and lasers. The majority of the references are those published in 1962 as well as those released in 1962 by ASTIA and NASA. This bibliography is a supplement to NASA N62-16763
J E T

N63-22775 Space Technology Labs., Inc., Redondo Beach, Calif.

INTERPLANETARY MATTER: A BIBLIOGRAPHY 1962 Supplement

L. R. Magnolia, comp. Apr. 1963 298 p 567 refs Suppl. to N62-16764 17-28

(Research Bibliography 46; Rept. 9990-6380-KU-000)

This bibliography consists of 567 annotated references on asteroids, comets, meteorites, meteors, micrometeorites, noctilucent clouds, nonterrestrial dust, origin of the solar system, tektites, the zodiacal light, and related subjects. The majority of the references are those published in 1962 as well as those released in 1962 by ASTIA and NASA. This bibliography is a supplement to NASA N62-16764. J.E.T.

N63-22776 Space Technology Labs., Inc., Redondo Beach, Calif

RENDEZVOUS AND ORBITAL DOCKING: A BIBLIOGRAPHY

J. F. Price and A. K. Dunlap, Apr. 1963, 139 p, 369 refs

(Research Bibliography 47, Rept. 9990-6385-KU-000)

A partially annotated bibliography is presented on rendezvous and orbital-docking studies, covering manned and unmanned rendezvous, as well as satellite interception.

P V E

N63-22777 Space Technology Labs., Inc., Redondo Beach, Calif

THE LUNAR BASE: A BIBLIOGRAPHY

L. R. Magnolia and A. K. Dunlap, comps. Aug. 1963, 96 p, 240 refs

(Research Bibliography 48, Rept. 9990-6450-KU-000)

An annotated bibliography is presented of articles dealing with the operation of manned lunar bases.

P V E

N63-22784 Technical Information Service, Washington, D.C.

MOON EXPLORATIONS: SPECIAL BIBLIOGRAPHY/INDEX

Nina Holt Bradshaw, Bette Archer Starnes, Gwenn Keithley, Lesley Zark, and James R. Brilhart, comps. May 1963, 258 p, 215 refs

Available from Tech. Inform. Serv. \$40.00

Presented are 215 reports selected from the literature published in U.S. Government Research Reports, covering the period from June 1956 through October 1962.

J E T

N63-22790 HRB-Singer, Inc., State College, Pa.
COMPREHENSIVE BIBLIOGRAPHY ON PARAMETRIC AMPLIFIERS

B. B. Palluconi, Dec. 4, 1962, 78 p, 495 refs

(B-2)

A comprehensive bibliography on parametric amplifiers which includes books, document bibliographies, and journal articles, and which covers the period from 1959 through 1962 is presented. A subject index is included, but no abstracts are given.

M P G

N63-22805 National Aeronautics and Space Administration, Washington, D.C.

AERONAUTICS AND SPACE BIBLIOGRAPHY FOR THE ELEMENTARY GRADES

Washington, Govt. Print. Off. [1963], 37 p, 488 refs, 2d ed., supplements 1st ed. (1961)

GPO: \$0.30

Books in this bibliography discuss the Nation's plans for manned and unmanned exploration of the moon, planets, and space; what new facts space scientists have discovered; how man must be protected from the hazards of space; the X-15 rocketship, and the lives of space pioneers. Included also are books giving basic facts about the heavens, the solar system, the moon, the sun, and how astronomers gather these facts. In addition, a brief list of aviation and aeronautics titles is provided. The bibliography also lists pertinent references, helpful pamphlets, charts, booklets, films and filmstrips, together with their sources.

I.v.L.

N63-22807 Lockheed Missiles and Space Co., Sunnyvale, Calif.

MANNED MILITARY MISSIONS IN ORBITAL SPACE: AN ANNOTATED BIBLIOGRAPHY

Peter R. Stromer, comp. Feb. 1963, 60 p, 142 refs

(Contract AF 04(695)-41)

(SB-63-27; LMSC-3-87-63-1)

A review of the recent aerospace literature has been made in an attempt to identify and isolate those missions of primary military significance for manned spaceflight.

Author

N63-22857 Defense Documentation Center, Alexandria, Va.
SPACE RENDEZVOUS, RESCUE AND RECOVERY: An Abstract Compilation and Report Bibliography

Preston C. Rogers, Jr., comp. Aug. 1963, 117 p, 570 refs

(AD-410085) OTS: \$1.14

Abstracts and bibliography on the following are included: space capsules, space navigation, space propulsion, space medicine, closed-cycle ecological systems, life support, space communication systems, space surveillance systems, space maintenance, astronauts, training, spaceborne computers, atmosphere entry, aerodynamic heating, data processing systems, radar equipment, optical equipment, infrared equipment, ultraviolet detectors, magnetometers, radiation measurement systems, rendezvous spacecraft, rendezvous trajectories, spacecraft, space flight.

Author

N63-22888 Aerospace Information Div., Library of Congress, Washington, D.C.

SOVIET LITERATURE ON PROTECTIVE STRUCTURES AND COMPONENTS: Comprehensive Report

(AID P-63-113) OTS: \$2.60 ph, \$0.80 mf

A compilation of abstracts on protective structures and components is given in a review of Soviet literature on ground-support equipment. This report covers materials relevant to transportation, launch sites, packaging, preservation, and storage.

C L W

N63-22889 Aerospace Information Div., Library of Congress, Washington, D.C.

PURIFICATION OF BORON. ANNOTATED BIBLIOGRAPHY BASED ON SOVIET OPEN LITERATURE

Sept. 13, 1963, 11 p, 7 refs

(AID B-63-114) OTS: \$1.60 ph, \$0.80 mf

This bibliography is based on Soviet open-source materials and covers the year 1956. The seven entries are arranged alphabetically by author. Annotations have been provided in all cases where abstracts are not available.

Author

N63-22916 Rochester U., N.Y.
A SELECTIVE BIBLIOGRAPHY ON THE ENDOCRINE RESPONSE TO IONIZING RADIATION

Frank M. Ganis, Thomas D. Brown, Carl L. Hansen, Jr., and Joe W. Howland, Nov. 4, 1963, 368 p, refs

(Contract W-7401-eng-49)

(UR-610) OTS: \$4.50

A bibliography is presented on the endocrine response to ionizing radiation, including selections on the following endocrine systems: adrenal, mammary, ovary, pancreas, parathyroid, pineal, pituitary, reproduction, testes, thyroid, and endocrine.

P V E

N63-23032 National Aeronautics and Space Administration, Marshall Space Flight Center, Huntsville, Ala.

1962 PUBLICATIONS By Engineering Materials Branch [A Compilation of Abstracts]

Jan. 7, 1963, 25 p, 31 refs

(NASA TM X-50836, MTP-P&VE-M-63-1) OTS: \$2.60 ph, \$0.95 mf

The mission of the Engineering Materials Branch is to conduct research and development in the fields of chemistry, metallurgy, chemical engineering, physics, and other technologies related to materials in research and engineering. These investigations are conducted in support of the launch vehicle programs. Author

N63-23047 North American Aviation, Inc., Downey, Calif. Space and Information Systems Div.
TELEMETERING SYSTEMS FOR THE LIFE SCIENCES A SURVEY
Mar 15, 1963 94 p 508 refs
(SID-63-284)

This report surveys the international literature in the last 10 years on methods for telemetering life sciences data with reference to earth- and space-based systems. Author

N63-23052 Gt Brit Ministry of Aviation, Nottingham
SOVIET ABSTRACTS: MECHANICS [SELECTED ABSTRACTS FROM REFERATIVNYI ZHURNAL: MEKhanika, NO. 8, 1962]
[1963] 29 p 74 refs In ENGLISH

Abstracts of papers are presented which discuss research in the following areas: (1) general mechanics, (2) hydro-mechanics, (3) hydrodynamics and hydraulics, (4) viscous fluid, boundary layer, heat transfer, and diffusion, and (5) elasticity and plasticity. P V E

N63-23353 North American Aviation, Inc., Downey, Calif. Space and Information Systems Div.
ULTRASONIC CLEANING: A BIBLIOGRAPHY
Mar 1, 1963 19 p 105 refs Covers periodical articles published during 1953-1962
(SID-63-167)

N63-23399 National Bureau of Standards, Washington, D C
BIBLIOGRAPHY ON ATOMIC TRANSITION PROBABILITIES
June 1963 16 p refs
(NBS Monograph 50)

N63-23561 Cornell Aeronautical Lab., Inc., Buffalo, N Y
INFORMATION PROCESSING RELEVANT TO MILITARY COMMAND: SURVEY, RECOMMENDATIONS AND BIBLIOGRAPHY, VOLUME II (BIBLIOGRAPHY APPENDIX)
Final Report
A. E. Murray and H. R. Leland Feb. 1963 64 p 223 refs
(Contract AF 19(628)-1625)
(FSD-TDR-63-349)

N63-23592 North American Aviation, Inc., Downey, Calif. Space and Information Systems Div.
THE TECHNIQUES OF RADIOGRAPHIC INSPECTION, A LITERATURE SURVEY [1950-1963]
L. G. Lubin Sept 11, 1963 54 p refs
(SID-63-1186)

This bibliography includes information on the fundamentals of radiographic inspection, and details on its various applications and techniques used in the nondestructive testing of materials in industry. Bibliographic references include literature in foreign languages as well as in English. Author

N63-23603 Naval Research Lab., Washington, D C.
DIRECT ENERGY CONVERSION LITERATURE ABSTRACTS
July 1963 183 p 1077 refs

This is a collection of references from various sources covering the current literature on thermoelectricity, thermionic emission, photoelectric processes, magnetohydrodynamics, electrochemical processes, energy storage, and energy sources. Author

N63-23615 Lockheed Missiles and Space Co., Sunnyvale, Calif.
EXPERIMENTAL MEASUREMENTS OF VELOCITY AND TEMPERATURE PROFILES AND SKIN-FRICTION IN SUPERSONIC TURBULENT COMPRESSIBLE FLOW: AN ANNOTATED BIBLIOGRAPHY
Eugene E. Graziano, comp. June 1963 32 p refs
(Rept 6-90-63-57, SRB-63-1)

The period searched was Jan 1950 to April 1963. Many of the documents cited contain theoretical treatments of the problem, and include related materials. Included were cases with and without longitudinal pressure gradients, and with and without heat transfer. Any body shape and any compressible fluid were acceptable. Author

N63-23707 Hughes Aircraft Co., Culver City, Calif.
A SELECTED BIBLIOGRAPHY ON SOVIET SATELLITE OPERATIONS 1957-1962
H. Matsumiya, comp. Feb. 1963 6 p 46 refs
(LS-BIB-63-1)

N63-23799 Lockheed Missiles and Space Co., Sunnyvale, Calif.
COST ESTIMATING FOR RESEARCH, DEVELOPMENT, AND INFORMATION PROCESSING PROGRAMS: AN ANNOTATED BIBLIOGRAPHY
Eugene E. Graziano, comp. Oct. 1963 19 p refs
(LMSC SB-63-70)

This bibliography is the result of a literature search on methods for estimating costs, particularly relating to manpower requirements, for aerospace R and D, engineering, information processing, and advanced programs. It has appeared from this study that methods for cost estimation might best be developed by the adaption of cost control methods. Author

1964 STAR ENTRIES

N64-10112 Library of Congress, Washington, D C. Aerospace Information Div.
TRACKING OF MISSILES AND SPACE VEHICLES, REVIEW OF SOVIET LITERATURE AID Work Assignment 12 [Aug. 1962-Dec. 1962]
Feb 21, 1963 26 p refs
(AID P-63-24, 19) OTS \$2 60 ph, \$0 98 mf

A report is given which is a part of a series reviewing Soviet development in tracking missiles and space vehicles. Topics covered in this report are: electromagnetic problems, ion clouds and ionosphere perturbations, and radioastronomy. C L W

N64-10115 Academy of Sciences (USSR), Moscow Soviet Geophysical Committee
INTERNATIONAL GEOPHYSICAL YEAR BIBLIOGRAPHY OF LITERATURE PUBLISHED IN RUSSIAN IN 1961
G. D. Aslanova, R. F. Zatrutina, L. S. Rubina, and V. A. Sokolova, comps. 1963 149 p refs In RUSSIAN; ENGLISH foreword and table of contents

N64-10137 North American Aviation, Inc., Downey, Calif
Space and Information Systems Div

**RAPID DETECTION OF TOXIC SUBSTANCES A SURVEY
[OF LITERATURE]**

Theodore N Cranford June 17, 1963 21 p refs
(SID-63-755)

A survey of the literature on detection instruments used to monitor the concentration of toxic gases and other poisonous materials in the atmosphere is presented. Author

N64-10147 Technische Hochschule Darmstadt (W. Germany)
Inst. für Flugtechnik

**THE STATE-OF-THE-ART OF PILOT CONTROL OF AIR-
CRAFT [OBER DEN WISSENSSTAND AUF DEM FOR-
SCHUNGSGEBIET DES "REGLER MENSCH"]**

Hubertus Schmidlein [1963] 56 p 82 refs In GERMAN Pre-
sented at the Ann. Meeting of the Wiss. Ge. Luft- und Raum-
fahrt, Munich, Oct. 8-12, 1963

Results of an extensive literature search indicate that the investigation of humans as controllers in a pilot-aircraft system is a very complex problem. In determining the human frequency response characteristics, two difficulties are encountered. The first lies in the fact that it is possible for a human to adapt his control attitude in a stepwise manner. The second difficulty is that the control attitude of the human is not linear and that it varies appreciably with time. The frequency-response characteristics of the pilot can, therefore, only be approximated. Thus, limitations of the use of a "formula-like" correlation for the frequency response characteristics is indicated. An extensive annotated bibliography relating to human engineering is presented. I.v.L.

N64-10220 Honeywell Research Center, Hopkins, Minn.
ION PROPULSION A Report Bibliography, Jan. 1959- Apr.
1963

C. S. Rank, comp. Apr. 1963 37 p refs
(RB-63-3)

The references of this bibliography are limited to ionic propulsion of the contact or bombardment type and to studies which are specifically related to the problems of ionic propulsion. P.V.E.

N64-10313 Texas A. and M. Coll., College Station
THERMOLUMINESCENCE BIBLIOGRAPHY

Ernest E. Angino and N. Grogler (Berne U.) Washington, AEC
Div. of Tech. Inform., Oct. 31, 1963 46 p 680 refs
(TID-3911(Rev. 1)) OTS: \$1.00

N64-10319 International Union of Pure and Applied Chem-
istry, Basle (Switzerland) Commission on High Temperatures
and Refractories

**BIBLIOGRAPHY ON THE HIGH TEMPERATURE CHEMISTRY
AND PHYSICS OF GASES AND GAS-CONDENSED PHASE
REACTIONS, NO. 9**

L. Brewer, comp. (Calif. U., Berkeley) Sept. 30, 1963 16 p

A bibliography of current research papers and reports on the reactions between gases and condensed phases and the spectroscopy of interest to high-temperature chemistry research (thermochemistry) is given. The papers included cite several references on the thermodynamic and mechanical properties of metals, refractory materials, and their alloys. D.E.R.

N64-10322 Lockheed Missiles and Space Co., Sunnyvale,
Calif

**NEAR FIELD PATTERN MEASUREMENTS: AN ANNOTATED
BIBLIOGRAPHY**

George R. Evans, comp. Apr. 1963 67 p 126 refs
(Special Bibliography SB-63-38, Rept. 6-90-63-50)

Various methods of pattern measurements are presented. It is shown that simplified methods of gain determination have been devised. Application can be made to the prediction of beamwidth and sidelobe level. Also, by a defocus principle, methods are presented for the measurement of Fraunhofer radiation patterns in the Fresnel region. Author

N64-10367 Polish Academy of Sciences, Warsaw. Mathe-
matical Inst.

BIBLIOGRAPHY OF POLISH MATHEMATICS, 1944-1954
1963 136 p refs Warsaw, Central Inst. for Inform. on Tech.
and Economic Studies Transl. into ENGLISH from Rocznik.
Polsk. Towarz. Matematycznego. Ser. II: Wiadomosci Mate-
matyczne

(OTS-61-11300) OTS: \$1.25

A bibliography is presented of Polish mathematical papers on various areas of mathematics. Each chapter begins with an analytical part, containing a characterization of the problems investigated and quotes of the main achievements. Areas of mathematics included are: (1) the theory of sets and mathematical logic, (2) topology, (3) functional analysis, (4) real functions, (5) differential equations, integral equations, and variational calculus, (6) analytic functions, (7) geometry, (8) algebra and theory of numbers, (9) theory of probability, (10) theoretical mechanics, technical applications, and mathematical apparatus, and (11) history, teaching, popularization, and organization of mathematics. P.V.E.

N64-10405 Lockheed Missiles and Space Co., Sunnyvale,
Calif.

**SUPERCONDUCTIVITY, 1961-1962: AN ANNOTATED BIB-
LIOGRAPHY, SUPPLEMENT I**

Jack B. Goldmann, comp. Apr. 1963 94 p 196 refs
(LMSC-6-90-63-43; SB-63-33)

Current theory, properties, and applications of supercon-
ductors as presented for the years 1961 to 1962 are covered.
The 196 entries, representing English and foreign language
publications, are arranged in alphabetical sequence according
to author. Author

N64-10414 Calif. Inst. of Tech., Pasadena

**GEOLOGICAL SCIENCES AT THE CALIFORNIA INSTITUTE
OF TECHNOLOGY: A REPORT FOR THE YEARS 1960 TO
1963 ON THE RESEARCH ACTIVITIES OF THE DIVISION
OF GEOLOGICAL SCIENCES**

1963 177 p refs

An annotated bibliography is presented of the research
activities of the division of geological sciences. This bibli-
ography covers the following areas: (1) geology, (2) geobiology,
(3) geochemistry, (4) geophysics, and (5) planetary science. I.v.L.

N64-10418 Hughes Aircraft Co., Culver City, Calif. Space
Systems Division Branch Library

**A SELECTED BIBLIOGRAPHY ON SATELLITE IDENTIFICA-
TION, 1958-1963**

H. Matsumiya, comp. Oct. 1963 8 p 59 refs
(LB-BIB-63-5)

N64-10432 Federal Aviation Agency Oklahoma City, Okla.
Civil Aero-medical Research Inst.

**ANNOTATED BIBLIOGRAPHY OF RECENTLY TRANSLATED
MATERIAL. I. Technical Publication No. I**

William E. Collins, Jerry V. Tobias, Mary Jane Capps, and Mary Ellen Allen. Comp. Aug. 1963 11 p 26 refs

An annotated bibliography of translations of foreign-language research articles is presented. The 26 listed entries are concerned with studies of voluntary nystagmus, vestibular nystagmus, EEG and vestibular stimulation, and effects of coriolis accelerations. Author

N64-10453 Joint Publications Research Service, Washington, D.C.

TRANSLATIONS FROM DOKLADY AKADEMII NAUK SSSR (REPORTS OF THE ACADEMY OF SCIENCES USSR) (RADIOBIOLOGY)

L. A. Kashchenko, Ye. D. Babskiy, A. L. Baranovskiy, G. Z. Ganyelin, L. S. Uflyaninskiy et al. Mar. 11, 1963 18 p refs Transl. into ENGLISH from Doklady Akad. Nauk SSSR (Moscow), v. 147, no. 1, 1962 p 217-220 and 255-258 (JPRS-18045; OTS-63-21290) OTS: \$0.50

Two topics are discussed. In the first, the radiation injury mechanism in mouse ovaries is investigated by irradiating the ovaries of sexually mature mice. In the second, electrical stimulation of the heart by means of radiofrequency impulse transmission and by induction is investigated. A discussion of results as well as a complete bibliography is included for each topic. J.E.T.

N64-10462 Technisch Documentatie en Informatie Centrum Voor de Krijgsmacht, The Hague (Netherlands)
BIBLIOGRAPHY, SHOCK AND VIBRATION ABSORPTION IN PACKAGING [BIBLIOGRAFIE SCHOK EN TRILLINGEN IN VERPAKKING]

L. J. van der Toorn Nov. 1961 263 p refs (TDCK-28650)

This bibliography contains abstracts of articles and reports on theory of shock, vibration, and damping. Attention is paid to the analysis of mechanical influences occurring during shipment, storage, and operational conditions. Part of the bibliography deals with test methods and measuring equipment. Obtained results are given. Extensive information is gathered on cushioning materials and shock- and vibration-resistant constructions as used in packaging techniques. Items on properties of materials are compiled. References on isolators against shock and vibration used for the protection of apparatus aboard ships, aircraft, and guided missiles are also included. Literature on air drop operations is presented.

Author

N64-10604 National Aeronautics and Space Administration, Washington, D.C.
AERONAUTICS AND SPACE BIBLIOGRAPHY FOR SECONDARY GRADES

Washington, Govt. Print. Off. [1963] 53 p refs 2d ed., Jan. 1960-Apr. 1963 Comp. for NASA by Natl. Aerospace Res. Council (NASA EP-2) GPO: \$0.35

An annotated bibliography is presented covering the following areas: (1) Books—space travel and space exploration, tools for the exploration of space, astronomy, biography, careers in space research and technology, and aviation and aeronautics; (2) Reference Materials—bibliographies, dictionaries, encyclopedias, etc.; (3) Teaching Aids—pamphlets, booklets, charts, etc., films and filmstrips, author and title indexes, and publishers' addresses. R.T.K.

N64-10605 National Aeronautics and Space Administration, Washington, D.C.
AERONAUTICS AND SPACE BIBLIOGRAPHY OF ADULT AEROSPACE BOOKS AND MATERIALS

Washington, Govt. Print. Off. [1963] 47 p refs 2d ed., Jan. 1960-Apr. 1963

(NASA EP-3) GPO: \$0.30

Bibliographic topics include: space exploration, space science, space research projects, space medicine, astronomy, aviation, and aeronautics, reference and miscellaneous materials, and films and filmstrips. J.E.T.

N64-10622 Hughes Aircraft Co., Culver City, Calif.
EPITAXIAL DEPOSITION OF SEMICONDUCTOR MATERIALS; AN ANNOTATED BIBLIOGRAPHY

C. L. M. Blocher, M. Bloomfield, and T. J. Lyndon Oct. 1963 68 p refs (LS-BIB-63-3)

This bibliography covers references on the epitaxial growth of semiconductor materials. The bibliography has been divided as follows: (1) general articles on the theory and techniques of epitaxial deposition and survey articles, (2) germanium, (3) silicon, (4) deposition for both germanium and silicon, and (5) other semiconductor materials. R.T.K.

N64-11288 Atomic Energy Commission, Washington, D.C. Div. of Technical Information

LIQUID METAL TECHNOLOGY. A LITERATURE SEARCH [1 Jan. 1957-30 Jun. 1963]

James M. Jacobs, comp. Aug. 1963 145 p refs (TID-3544 (Rev. I)) OTS: \$2.50

A total of 1682 citations is presented. References are collected under the following subject groupings: general, alkali metals, bismuth, bismuth alloys, bismuth-lead alloys, cesium, lead, lead alloys, lithium, mercury, mercury alloys, NaK, potassium reactor fuel alloys, rubidium, and sodium.

Author

N64-11338 National Aeronautics and Space Administration, Marshall Space Flight Center, Huntsville, Ala.
REFRACTORY COATINGS BIBLIOGRAPHY

David Roller (Magna Corp.) and D. W. Gates Jun. 1962 (rev.) 87 p 657 refs (NASA TM X-51209) OTS: \$8.10 ph, \$2.81 mf

This document constitutes a bibliography of reports on the general subject of refractory inorganic materials and, particularly, coating materials for use at temperatures over about 2500° F. Subjects which are related to high-temperature refractory inorganics have also been referenced. Author

N64-11407 Aeronautical Research Lab., Melbourne (Australia)

BIBLIOGRAPHY ON ELECTRICAL RESISTANCE STRAIN GAUGES Second Edition, Before and Including 1955

Katarina Muir, R. N. Robinson and I. G. Scott Apr. 1963 109 p refs (Bibliog ARL/SM4)

A collection has been made of known sources of information relating to electrical resistance strain gages, their characteristics, application, and use, together with the necessary electrical, or electronic, measuring equipment. Some closely related topics are also listed. Author

N64-11412 Lockheed-California Co., Burbank
SPACECRAFT GUIDANCE CONTROL AND RELATED TOPICS: A BIBLIOGRAPHY OF THE OPEN LITERATURE, JANUARY 1962-JUNE 1963

R R Scranton and A A Beltran, comp. Aug 1963 69 p refs. (LR-17100)

The recent literature on navigation, guidance control, and reentry of spacecraft is presented in this unannotated bibliography. Emphasis has been placed on rendezvous, docking, energy management, and manual control. Author

N64-11540 Lockheed Missiles and Space Co., Sunnyvale, Calif.

RFI TESTING FROM 200 Mc TO 10 Gc: AN ANNOTATED BIBLIOGRAPHY

Eugene E Graziano, comp. Jun. 1963 32 p refs
(Contract AF 33(657-9145)
(LMSD SB-63-48)

This selective bibliography of 79 items is the product of a search of the world literature for the period January 1955 to May 1963. Of particular interest were testing methods and procedures for the detection and measurement of conducted and radiated RFI in the range 200 Mc to 10 Gc. Testing procedures for component susceptibility and RFI generation in these same electromagnetic ranges were of equal interest. Author

N64-11733 Ohio State U., Research Foundation, Columbus. Antenna Lab.

LASER MATERIALS: A TUTORIAL REVIEW WITH BIBLIOGRAPHY

James E. Bradley. 1 May 1963 298 p refs
(NASA Grant NSG-74-60)

(NASA CR-52903; Rept. 1093-17) OTS: \$18.50 ph, \$9.14 mf
A basic and tutorial paper, dealing with the nature of crystals and glasses, and to a lesser extent with some of the possible laser ions is presented. Also included is a bibliography, in part annotated, containing standard references and data sources as well as specific articles dealing with a variety of subjects related to crystals, glasses, spectra, and other subjects related to laser materials. Author

N64-11821 North American Aviation, Inc., Downey, Calif. Space and Information Systems Div

HYPOTHERMIA AND ARTIFICIAL HIBERNATION FOR SPACE TRAVEL, A SURVEY

2 Mar. 1963 54 p 194 refs
(SID 63-354)

This is a survey of the research problem of sending a man on a long space voyage in a state of hypothermia or artificial hibernation. Bibliographic references include foreign language literature as well as English. Author

N64-11947 Hanford Atomic Products Operations, Richland, Wash.

REVIEW OF POWER AND HEAT REACTOR DESIGNS (DOMESTIC AND FOREIGN)

E. R. Appleby, comp. Oct. 1963 371 p refs
(Contract AT(45-1)-1350)
(HW-66666 REV 2) OTS: \$4.50

An annotated bibliography is presented on the following: (1) aqueous homogeneous suspension and molten-salt homogeneous reactor; (2) boiling light-water reactors; (3) cavity reactors; (4) gas-cooled reactors; (5) heavy-water moderated reactors; (6) liquid-metal reactors; (7) organic moderated and/or cooled reactors; (8) pressurized light-water reactors; (9) steam-cooled reactors; (10) systems for nuclear auxiliary power (SNAP); and (11) available information on proposals or projects for which no reactor type has been selected. R.T.K.

N64-12013 Lockheed Missiles and Space Co., Sunnyvale, Calif.

ABNORMAL GRAIN GROWTH IN ALUMINUM AND ITS ALLOYS: AN ANNOTATED BIBLIOGRAPHY

Charles G. Gros, comp. Jun. 1963 16 p 37 refs
(SRB-63-3)

This work deals with abnormal grain growth in aluminum and its alloys in the field of critical straining and thermal treatment. Material on the prevention of such growth by "seeding" aluminum alloys with intermetallics is included, as is material on other new prevention techniques. The period covered is from 1950 through May 1963. Author

N64-12078 Aerospace Information Div., Library of Congress, Washington, D.C.

TRACKING OF MISSILES AND SPACE VEHICLES. COMPILATION OF ABSTRACTS

4 Nov. 1963 26 p refs

(AID-P-63-118; AD-424026) OTS: \$2.60 ph, \$0.98 mf

This report presents papers dealing with the following main topics: (1) ion clouds and ionospheric perturbation; and (2) radio astronomy. I v.L.

N64-12165 National Bureau of Standards, Boulder, Colo. **BIBLIOGRAPHY ON ATMOSPHERIC ASPECTS OF RADIO ASTRONOMY**

Wilhelm Nupen. 1 May 1963 453 p 1013 refs. Meteorol. and Geostrophysical abstracts prepared by Am. Meteorol. Soc (NBS-TN-171). Available from GPO

This annotated bibliography contains references from the literature published between 1900 and 1961, inclusive, but the bulk of the literature follows the discovery by Jansky in 1932 of radiofrequency radiation from the sun, and especially the building of radio telescopes since World War II. The subject matter is confined to: (1) the effects of the earth's atmosphere on radiofrequency radiation from the sun, planets, stars, the galaxies, and intergalactic space, and (2) knowledge of atmospheric or ionospheric structure, composition, or physics. R.T.K.

N64-12382 Lockheed Missiles and Space Co., Sunnyvale, Calif.

STRUCTURAL STABILITY OF TOROIDAL SHELLS: AN ANNOTATED BIBLIOGRAPHY

Peter R. Stromer, comp. Jun. 1963 29 p refs
(Contract N0w 63-0050-C)
(LMSC-SB-63-50; AD-423823)

The toroidal shape is of particular interest in space applications as an optimum design for space vehicle liquid-storage containers, and for inflatable or collapsible structures. Torus designs have also been used by nuclear physicists to confine atomic fusion reactions in particle accelerators. Toroidal configurations are identified by their "donut" shape and have also been referred to as "anchor rings," "tore-shaped" shells, and in combination with spheres as torispherical shells. Both linear and nonlinear methods of stress analysis have been developed to study the structural stability of these shells; however, no reference to buckling behavior of toroids was located in this review of the literature covering the period January 1948 to June 1963. Author

N64-12443 Joint Publications Research Service, Washington, D.C.

THE USE OF UNICELLULAR ALGAE FOR HUMAN NUTRITION (LITERATURE SURVEY)

N. N. Boyko, N. S. Klyushkina, and Yu. I. Kondrat'yev. In its Transl. on Nutrition 16 Dec. 1963 p 1-10 refs (See N64-12442 04-16)

Investigations cited in this survey indicate that the unicellular algae, *Chlorella* and *Senedesmus*, are suitable as a supplement to human nutrition in a quantity of 30 to 40 grams per day. Furthermore, on the basis of the findings of Powell et al (1961), it may be assumed that man will tolerate well a diet containing up to 100 grams of dry algae daily, at least for a short time. Powell et al note that with algae nutrition, the gastrointestinal symptoms were more pronounced during the first days following consumption. This indicates a rather good adaptability of man to a diet to which unicellular algae are added. According to Japanese scientists, *senedesmus* protein is somewhat less digestible than *chlorella* protein, and bleached *chlorella* protein is better assimilated in the human organism than unbleached *chlorella* protein. I. V. L.

N64-12579 Defense Atomic Support Agency, Washington, D C

ELECTROMAGNETIC PULSE BIBLIOGRAPHY

Charles A. Blank, comp. 17 Jan. 1963 16 p refs
(DASA-618, AD-296777)

A bibliography is presented of the literature dealing with the electromagnetic pulse arising from nuclear detonation.

R. T. K.

N64-12596 Aerospace Information Div., Library of Congress, Washington, D C.

NONLINEAR FIELD THEORIES (ANNOTATED BIBLIOGRAPHY) [Period Covered Jan. 1958-Feb. 1963]

21 Oct 1963 40 p refs

(AID-B-63-115, AD-422890) OTS \$3.60 ph, \$1.40 mf

A preliminary survey of Soviet-Bloc materials on nonlinear field theories (elementary particles) from the period January 1958 to February 1963 is presented. P. V. E.

N64-12673 Lockheed Missiles and Space Co., Sunnyvale, Calif.

DIFFUSION BONDING: AN ANNOTATED BIBLIOGRAPHY

Scott J. Buginas, comp. Mar. 1963 33 p 89 refs
(Contract NOW-63-0050-C)

(LMSC-SB-63-44, AD-423723)

This bibliography contains 89 selected references on hot pressure welding and diffusion bonding from the years 1940 to 1962. Indexes are included. Author

N64-12674 Lockheed Missiles and Space Co., Sunnyvale, Calif.

AUXILIARY POWER SYSTEMS FOR SPACECRAFT: AN ANNOTATED BIBLIOGRAPHY

Peter R. Stromer, comp. May 1963 60 p 126 refs
(Contract AF 04(695)-136)

(LMSC-SB-63-46, AD-423714)

One hundred and thirty-five references have been selected from the 1962-1963 literature reporting research and development in auxiliary power systems for spacecraft. Emphasis has been placed on solar and nuclear auxiliary power sources with only a representative sampling of other concepts such as magnetohydrodynamics, biochemical and hydrox fuel cells, batteries, etc. Author

N64-12675 International Union of Pure and Applied Chemistry, Basle (Switzerland)

BIBLIOGRAPHY ON THE HIGH TEMPERATURE CHEMISTRY AND PHYSICS OF MATERIALS IN THE CONDENSED STATE, NUMBER 3, JULY, AUGUST, SEPTEMBER 1963

J. J. Diamond, ed. (Nat'l. Bureau of Standards) [1963] 59 p refs. For presentation at conf. on "The Measurement of High Temperature," Inst. of Electrical Eng., London, May 11-13, 1964.

Contents include: (1) devices for achieving temperatures above 1500° C; (2) devices for measuring and controlling temperatures above 1500° C; (3) devices for physical measurements at temperatures above 1000° C; (4) properties, at temperatures below 1000° C, of materials which melt above 1500° C; (5) properties, at temperatures above 1000° C, of materials which melt above 1500° C; (6) properties, at temperatures above 1000° C, of materials which melt below 1500° C; (7) phase equilibria; and (8) reactions at temperatures above 1000° C. J. E. T.

N64-13067 Alcoa Research Labs., Aluminum Co. of America, New Kensington, Pa.

WELDABLE HIGH STRENGTH ALUMINUM ALLOYS Literature Survey

W. G. Fricke, Jr., E. G. Haney, W. A. Anderson, and H. Y. Hunsicker. 20 Aug. 1963 90 p refs

(NASA Contract NAS8-5452)

(NASA CR-52372) OTS: \$8.10 ph, \$2.90 mf

Published information on the properties and characteristics of high-strength aluminum alloys was reviewed, with particular emphasis on their qualifications for use in welded cryogenic structures. The available information concerning effects of composition, fabricating, and heat treatment factors on the properties of the different types of alloys was examined to ascertain the most promising avenues for further development. The Al-Zn-Mg type alloys currently under development combine good weldability with fairly high strength and cryogenic temperature notch toughness. The Al-Cu type alloys are also considered to offer possibilities of improvement toward the program objectives. Author

N64-13075 Lockheed Missiles and Space Co., Sunnyvale, Calif.

VACUUM DEPOSITION OF THIN FILM ELECTRONIC COMPONENTS: AN ANNOTATED BIBLIOGRAPHY

Scott J. Buginas, comp. Feb. 1963 39 p refs

(Contract NOW-63-0050)

(SB-63-15, AD-423673)

This bibliography contains references primarily within the span 1960 to 1962. A few key items from earlier years have been included to fill in subject gaps. Conductors, connectors, resistors, and capacitors were of prime interest. Author

N64-13305 Lockheed Missiles and Space Co., Sunnyvale, Calif.

THE BIOLOGY OF SPACE FLIGHT: AN ANNOTATED BIBLIOGRAPHY [1958-1962]

Charlie M. Pierce, comp. Apr. 1963 317 p refs

(Contract AF 04(695)-136)

(Special Bibl. SB-63-20; Rept. 8-55-63-2; AD-425912)

The topics included are food provisions, atmosphere control, waste control and water recovery, emergency survival systems, psychology, radiation and meteoroids, gravitation, magnetic fields, and exobiology. Author

N64-13327 Lockheed Aircraft Corp., Sunnyvale, Calif.

MECHANICS OF HEAT PUMPS AND ABSORPTION REFRIGERATION: AN ANNOTATED BIBLIOGRAPHY, DEC. 1961

Helen M. Abbott, comp. Apr. 1962 34 p refs

(Contract AF 04(647)-791)

(SB-62-16, AD-276467)

This collection of references was selected as an aid to further research on the use of heat pumps for spacecraft applications in systems needing reversed cycles for heating and cooling. The mechanics of heat pumps, absorption refrigeration, thermoelectric and solar refrigeration were investigated.

Author

N64-13390 Mound Lab., Miamisburg, Ohio
PREPARATION AND PROPERTIES OF PLUTONIUM CARBIDE: A BIBLIOGRAPHY [1947-NOV. 1963]

C. P. Johnston, F. D. Lonadier, and J. A. Powers 27 Nov. 1963
11 p refs
(Contract AT(33-1)-GEN-53)
(MLM-1169) OTS: \$0.50

N64-13622 Parke Mathematical Labs., Carlisle, Mass.
SELECTED ANNOTATED BIBLIOGRAPHY ON SYSTEMS OF THEORETICAL DEVICES Scientific Report No. 4

C. Robert Montgomery Sep. 1963 51 p refs
(Contract AF 19(628)-2417)
(AFCL-63-515; AD-425691)

Abstracted papers are grouped in chronological order under four general categories: (1) automata and self-duplicating machines; (2) logic, including computing and abstraction; (3) neurophysiological systems, including bionics and simulation; and (4) switching, including electrical systems. The scope of the material included under each of these headings is limited to theoretical devices as opposed to hardware and practical technology. An author index is included. M.P.G.

N64-13803 Naval Research Lab., Washington, D.C. Solid State Div.

A FAR INFRARED BIBLIOGRAPHY

E. D. Palik Apr. 1963 56 p refs
(NRL-Bibl-21; AD-407047) OTS \$1.50

This bibliography covers research accomplished during the years 1889 through 1962. Among the subjects included are instrumentation and techniques, optical properties of gases, optical properties of liquids, and optical properties of solids. Also included is a graph of the growth of far-infrared research.

R.T.K.

N64-13902 Advisory Group for Aeronautical Research and Development, Paris (France)
VTOL/STOL AIRCRAFT. BIBLIOGRAPHY 2: FIRST SUPPLEMENT 1961/62

G. Bock, H. G. Klug, and H. Spintzyk, comps. Jun. 1963 121 p refs

This bibliography covers the literature published during the years 1961-1962. It comprises all available publications related to problems in the field of V/STOL. The different fields of V/STOL are divided into the following: general studies, aerodynamic problems, stability and control in hovering and transition flight, powerplants, test techniques, atmosphere, operational problems, and loads and construction.

C.L.W.

N64-14019 Union Carbide Research Inst., Tarrytown, N.Y.
BIBLIOGRAPHY ON ANALYTICAL CHEMISTRY RELATING TO BORIDES, CARBIDES, AND NITRIDES OF GROUP IV AND V ELEMENTS

Mary R. Bateman, Gloria J. McKinley, G. H. Clewett, and H. F. Wendt, comps. [1963] 44 p refs
(Contract DA-30-069-ORD-2787)
(Tech. Rept. C-20; AD-426742)

The bibliography covers a period from 1944 through 1963 and is accompanied by a subject index.

P.V.E.

N64-14021 Library of Congress, Washington, D.C. Aerospace Information Div.

LUMINESCENCE OF COMPLEX MOLECULES. ANNOTATED BIBLIOGRAPHY BASED ON SOVIET OPEN LITERATURE Report No. 1 [Jan. 1-Dec. 1962]

30 Dec. 1963 77 p 145 refs
(AID-B-63-125; AD-427157) OTS: \$7.60 ph. \$2.51 mf

The following areas are included: (1) luminescence of complex molecules—lifetime of excited states and quantum yield of luminescence; (2) luminescence of complex molecules—physical status and conversion of energy levels; and (3) applications of luminescence.

R.T.K.

N64-14068 California U., Livermore. Lawrence Radiation Lab.

ANNOTATED BIBLIOGRAPHY OF THEORIES OF THE EQUATION OF STATE OF HIGH TEMPERATURE GASES

Stephen G. Brush 3 Jul. 1963 100 p refs
(Contract W-7405-eng-48)
(UCRL-6473; Suppl. 1) OTS: \$2.25

Works on the theory of ionized gases and strong electrolyte solutions are listed. The scope includes temperatures down to about 2000° K and studies of the effects of pair production at very high temperatures. Investigations of the lowering of the ionization potential in a plasma, and the equilibrium concentrations of ions have also been included.

C.L.W.

N64-14079 British Hydromechanics Research Assn., Harlow
A BIBLIOGRAPHY ON BUTTERFLY VALVES

Aug. 1963 17 p 76 refs
(BIB-14)

Included is an annotated bibliography, an author index, and notations on which publications can be found in the British Hydromechanics Research Association Library.

R.T.K.

N64-14182 National Academy of Sciences-National Research Council, Washington, D.C.
DIELECTRICS: DIGEST OF LITERATURE, VOLUME 26, 1962

Daniel Berg (Westinghouse Elec. Corp.) and John C. Devins (GE) 1963 254 p refs
(NAS-NRC-1139; AROD-3935-3; AD-424943) Available from NAC-NRC: \$15.00

CONTENTS:

1. TRENDS IN DIELECTRIC RESEARCH DURING 1962
J. C. Devins (GE) p 1-6

2. INSTRUMENTATION AND MEASUREMENTS R. W. Tucker, J. I. Cooperman, and R. F. Shoemaker (Harry Diamond Lab.) p 7-26 refs (See N64-14183 06-25)

3. TABLES OF DIELECTRIC CONSTANTS, DIPOLE MOMENTS, AND DIELECTRIC RELAXATION TIMES R. D. Nelson, Jr. (Princeton U.) p 27-99 refs (See N64-14184 06-23)

4. MOLECULAR AND IONIC INTERACTIONS IN DIELECTRICS K. H. Illinger (Tufts U.) p 99-116 refs (See N64-14185 06-23)

5. CONDUCTION IN SOLID DIELECTRICS J. W. Davisson and J. Pasternak (Naval Res. Labs.) p 117-156 refs (See N64-14186 06-25)

6. THE BREAKDOWN OF DIELECTRICS B. W. Ward, T. J. Gallagher, and B. Salvage (London U.) p 157-185 refs (See N64-14187 06-23)

7. FERROELECTRIC AND PIEZOELECTRIC MATERIALS W. R. Cook, Jr. (Clevite Corp.) p 187-227 refs (See N64-14188 06-25)

8 HIGH POLYMERIC MATERIALS L W Frost (Westinghouse Elec. Corp.) p 229-265 refs (See N64-14189 06-19)

9 INSULATING FILMS AND FIBROUS MATERIALS D D Kasarda (Bell Telephone Labs.) p 265-283 refs (See N64-14190 06-19)

10 INSULATING LIQUIDS AND APPLICATION M P Strier (Edison (Thomas A.) Ind.) p 285-302 refs (See N64-14191 06-19)

11 INORGANIC INSULATION R C Anderson (GE) p 303-315 refs (See N64-14192 06-19)

12 APPLICATIONS [OF INSULATING MATERIALS AND DIELECTRICS TO ELECTRICAL MACHINERY AND DEVICES] H M Philofsky (Westinghouse Elec. Corp.) p 317-344 refs (See N64-14193 06-01)

N64-14189 Westinghouse Electric Corp., Pittsburgh, Pa. Research Labs

HIGH POLYMERIC MATERIALS

L W Frost. *In* Natl. Acad. of Sci.-Natl. Res. Council Dielectrics. Dig. of Lit., Vol. 26, 1962-1963 p 229-265 refs (See N64-14182 06-01)

An annotated bibliography covering the following topics is presented: general studies; mechanical properties and testing; electrical properties and testing; thermal stability and high-temperature properties; casting; potting; encapsulation; wire insulation and varnishes; special applications; fluidized bed coating; irradiation; adhesives and tapes; reinforced plastics; foams; elastomers; block and graft polymers; acrylics; polyamides and polyimides; polycarbonates; cellulose and derivatives; epoxies; polyester; polyethers; fluorinated polymers; hydrocarbon polymers; phenolics and melamines; silicones; polyurethanes; vinyl polymers; phenolics and melamines; silicones; polyurethanes; vinyl polymers; and other polymers
R T K

N64-14190 Bell Telephone Labs. Inc., Murray Hill, N.J.
INSULATING FILMS AND FIBROUS MATERIALS

Donald D. Kasarda. *In* Natl. Acad. of Sci.-Natl. Res. Council Dielectrics. Dig. of Lit., Vol. 26, 1962-1963 p 267-283 refs (See N64-14182 06-01)

The following subjects are included in the annotated bibliography: fibers and fibrous materials; polymer films; capacitors and other applications; and review articles.
R T K

N64-14192 General Electric Co., Schenectady, N.Y. Research Lab

INORGANIC INSULATION

R C Anderson. *In* Natl. Acad. of Sci.-Natl. Res. Council Dielectrics. Dig. of Lit., Vol. 26, 1962-1963 p 303-315 refs (See N64-14182 06-01)

An annotated bibliography is presented that concerns single-phase materials, vitrified silicates, glass, and mica.
R T K

N64-14249 Canadian Armament Research and Development Establishment, Valcartier

SPACE DEBRIS AND SPACE FLIGHT

H. P. Tardif. Apr. 1963 28 p refs
(CARDE TM-720/63; AD-408253)

This memorandum is essentially a literature survey on the problem of space flight in a meteoritic environment. It covers in a general manner the fields of meteoritic environment, the deterioration of the skin of a spaceship under impacts by meteoroids, and the methods published to date for the prevention of such damage.
Author

N64-14260 American Meteorological Society, Boston, Mass. Meteorological and Geostrophysical Abstracts

BIBLIOGRAPHY ON METEOROLOGICAL SATELLITES (1952-1962)

Elemer Kiss, comp. Washington, Weather Bureau, Apr. 1963 400 p refs
GPO: \$1.25

This annotated bibliography contains information on the following subjects: (1) general works—books, reports, bibliographies, etc.; (2) instrument carriers—satellites, space probes, rockets; (3) instruments; (4) observational methods and techniques; (5) parameters—atmospheric structure, composition, radiation; (6) weather observations—clouds, storms, etc.; (7) weather forecasting; and (8) programs and projects.
R.T.K.

N64-14274 National Aeronautics and Space Administration, Marshall Space Flight Center, Huntsville, Ala.

A BIBLIOGRAPHY OF THE SATURN SYSTEM

Truman E. McClard. 12 Dec. 1962 116 p refs
(NASA TM X-50409; M-SAT-62-4) OTS: \$9.60 ph, \$3.68 mf

To aid those interested in the Saturn development, a partial listing of the documentation has been assembled. The reports are arranged in three principal categories—Technical Reports, Test Reports, and General Documents—and are listed by date of publication. An author index is included.
E.W.

N64-14313 Picatinny Arsenal, Dover, N. J. Plastics and Packaging Lab.

LITERATURE SURVEY ON THERMAL DEGRADATION, THERMAL OXIDATION, AND THERMAL ANALYSIS OF HIGH POLYMERS

David W. Levi. Jun. 1963 156 p refs
(Plastec Note 7; AD-276141) OTS: \$2.75

A bibliography is given of references resulting from a literature survey on thermal degradation, thermal oxidation, and thermal analysis of high polymers. Typical of the materials included are: polystyrene, polyethylene, polybenzyls, polyphenyls, polyxylenes, hydrocarbon polymers, halogen substituted polymers, polymers containing acid and ester groups, synthetic polymers, and some inorganic and semiorganic systems. Items are grouped under general and material headings, and a subject index and an author index are provided.
Author

N64-14421 North American Aviation, Inc., Downey, Calif. Space and Information Systems Div.

SPACE LOGISTICS TECHNICAL DOCUMENTATION

10 Oct. 1962 68 p refs
(SID-62-1215)

An annotated bibliography is presented on the following areas related to space logistics: guided missile containers, data systems, environment control, equipment, Operation Golden Ram, maintainability, mathematical models, personnel, propellant handling, reentry, reliability, rendezvous, rescue systems, satellite base, SLOMAR (Space Logistics, Maintenance and Rescue System), training, and transportation.
R.T.K.

N64-14422 North American Aviation, Inc., Downey, Calif. Space and Information Systems Div.

ULTRASONIC MEASUREMENT, A BIBLIOGRAPHY [1953-1962]

[1963] 11 p refs
(SID-63-168)

N64-14424 North American Aviation, Inc., Downey, Calif
Space and Information Systems Div
STAR PATTERN RECOGNITION. A SURVEY OF THE LITERATURE [1958-1963]
H. W. Sowers 25 Oct. 1963 34 p refs
(SID-63-710)

Literature on star-pattern recognition, devices, and related topics since 1958 is surveyed. References to reports and periodical literature of English and foreign origin are included; foreign references deal only with related topics. All known star-pattern recognition concepts, of an unclassified nature, have been included. Author

N64-14492 Lockheed Aircraft Corp., Sunnyvale, Calif
Missiles and Space Div
RADIATION PLUME GEOMETRY OF MISSILES: AN ANNOTATED BIBLIOGRAPHY
Charles G. Gros, comp. May 1963 42 p 76 refs
(Contract AF 04(647)-787)
(Rept. 8-19-63-6, SB-63-29, AD-427252)

This work refers to reports on the spectral distribution of radiant energy from the exhaust plumes of intermediate and intercontinental missiles. It also contains references to infrared bibliographies and to such related materials as bears on the location of missile trajectories. Generally, the period covered is for 1961 and 1962. Author

N64-14673 Los Alamos Scientific Lab., N. Mex
SELECTED CONTRIBUTIONS TO HIGH PRESSURE RESEARCH FROM THE LOS ALAMOS SCIENTIFIC LABORATORY
Barbara L. Hendry, comp. and ed. 27 Jan. 1964 32 p refs
(Contract W-7405-eng-36)
(LAMS-3011) OTS: \$0.75

A bibliography of selected references on high-pressure research is presented. R.T.K.

N64-14680 California U., Los Angeles, Aeronautics Lab.
AN AEROSONICS BIBLIOGRAPHY
Alan Powell and T. J. B. Smith Oct. 1963 116 p refs
(Contract Nonr-233(62))
(Rept. 63-51; AD-425679)

This bibliography consists mainly of references to open literature relating to those sections of acoustics that are primarily associated with fluid motion and thermal action. The contents have been brought up to date by inclusion of all available references up to May 1963. I.v.L.

N64-14757 Brookhaven National Lab., Upton, N.Y.
MUON BIBLIOGRAPHY
Marjorie Comstock, comp., and Leon M. Lederman Sep. 1963 23 p refs
(BNL-809(L-342)) OTS: \$0.50

This bibliography covers the following topics: static properties, electromagnetic interaction, muonic atoms and molecules, muons in solids, weak interactions (decay, capture, etc.), muon structure and anomalous interaction, cosmic rays, and muon beams. R.T.K.

N64-14815 Army Chemical Center, Edgewood, Md
FOURTEENTH MATERIALS REVIEW, JANUARY 1963-JULY 1963
Arthur Lyem Dec. 1963 90 p refs
(CRDL-SP-5-3, AD-429071)

Information concerning recent technological advances is presented under five major headings: high polymers, plastic materials, synthetic fibers, miscellaneous organic and inorganic compounds, and metals and alloys. Materials and technological aspects are discussed, and a complete bibliography is given. Author

N64-14836 Atomic Energy Commission, Washington, D.C.
Div. of Technical Information
DIRECT ENERGY CONVERSION AND SYSTEMS FOR NUCLEAR AUXILIARY POWER (SNAP). A LITERATURE SEARCH
Sidney F. Lanier and Henry D. Raleigh, comps. Jan. 1963 66 p refs (See N62-16735 17-07)
(TID-3561(Rev. 3)) OTS: \$1.50

This search contains 552 references to publications on the SNAP Program and related topics. The references, taken from *Nuclear Science Abstracts* and covering the issues through December 31, 1962, are grouped into the following subject categories: radioisotope-fueled units, reactor-fueled units, direct energy conversion, and general topics on nuclear auxiliary power. I.v.L.

N64-14871 American Society of Civil Engineers, New York, N.Y.
REACTOR CONTAINMENT
Richard J. Smith, ed. AEC Div. of Tech. Inform., Nov. 1963 26 p refs
(NP-12980) OTS: \$0.50

A total of 157 references pertaining to reactor containment is presented in five categories of interest: site selection and location, containment design criteria, dynamics and missile effects, structural and mechanical design, and construction and testing. Covered is the period from 1949 through 1962. Author

N64-14885 Defense Research Board, Ottawa (Canada)
BIBLIOGRAPHY OF DRB SPACE RESEARCH PUBLICATIONS (TO JUNE 1963)
R. J. Penner, comp. Nov. 1963 26 p refs
(DSIS-B12)

This bibliography contains an annotated list of published papers and reports dealing with space technology. It was prepared by DRB directorates, establishments, grantees, and cooperating agencies. The annotations are taken from catalog cards of the Directorate of Scientific Information Services (DSIS), and consist of author abstracts where available, or of indicative abstracts prepared by DSIS. I.v.L.

N64-14890 Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena
ASTRONAUTICS INFORMATION: TELEVISION, PHOTOGRAMMETRY, PHOTOMETRY, AND RADIOMETRY ADAPTABLE TO SPACE RECONNAISSANCE
Judith Hayes, comp. Nov. 1963 308 p 2026 refs
(NASA Contract NAS7-100)
(NASA CR-53045; JPLAI/LS 490) OTS: \$19.75 ph, \$9.74 mf

This literature survey covers the following sources: Astronautics Information Abstracts, Astronautics Information Survey, Astronomischer Jahresbericht, Applied Science and Technology Index, Electrical Engineering Abstracts, Engineering Index, Physics Abstracts, Defense Documentation Center, JPL IBM Subject Listing, JPL Book File, and Publishers Guide to Books in Print. The time period covered is from 1959 to 1963. An author index and a corporate source index are included. R.L.K.

N64-15250 Oak Ridge National Lab., Tenn.
CUMULATIVE BIBLIOGRAPHY OF LITERATURE EXAMINED BY THE RADIATION SHIELDING INFORMATION CENTER, SEPTEMBER 1963

S. K. Penny, D. K. Trubey, L. Jung, and M. B. Emmett 7 Jan 1964 312 p refs
 (ORNL-RSIC-2)

The list of subject categories includes basic nuclear and atomic information, radiation effects, transport theory, experimental techniques, results of radiation transport calculations and experiments for simple geometries, shield-design techniques, and shielding materials. An author index is given.
 R. L. K.

N64-15525 Defense Documentation Center, Alexandria, Va.
EXPLODING WIRES, FILMS, AND RIBBONS Annotated Bibliography

3 Jun. 1963 14 p refs
 (AID-B-63-78; AD-406244) OTS: \$1.60 ph, \$0.80 mf
 Included in this bibliography are 14 Soviet periodicals covering the period from 1956 to June 1963.
 E. W.

N64-15674 Hughes Aircraft Co., Culver City, Calif.
CONTRACT PROPOSALS: A SELECTED BIBLIOGRAPHY, 1961-1963

H. D. Hennesy Dec 1963 8 p refs
 (LS-BIB-63-6)

This selected bibliography of contract proposals contains references to periodicals and books.
 R. T. K.

N64-15735 Southwest Research Inst., San Antonio, Tex.
REVIEW OF LITERATURE ON STORAGE AND THERMAL STABILITY OF JET FUELS

Robert K. Johnston and E. L. Anderson Wright-Patterson AFB, Ohio, Research and Technology Div., Jan. 1964 35 p refs
 (Contract AF 33(657)-11246)
 (RTD-TDR-63-4270; AD-429937)

A selective review has been made of the technical literature on storage and thermal stability of jet fuels, in order to provide background for a current experimental program on the effect of additives on JP-6 fuel deterioration. The literature review and the experimental program are directed primarily toward information on deterioration of thermal stability during normal storage. The subjects reviewed include thermal-stability test methods, storage stability and deterioration of thermal stability, additives for improvement of thermal and storage stability of jet fuels, and special storage problems.
 Author

N64-15758 Lockheed Missiles and Space Co., Sunnyvale, Calif.

SPACE TELEVISION: AN ANNOTATED BIBLIOGRAPHY

Eugene E. Graziano, Comp. Mar. 1962 36 p refs
 (Contract AF 04(647)-791)
 (LMSC-3-79-61-1; SB-61-63; AD-296805)

This selective bibliography was compiled in support of research regarding television as a medium to obtain biomedical information by monitoring space travelers during flight. All aspects of space vehicle television systems, including recording, transmission, and ground reception, were of interest. The materials cited date from January 1959 to October 1961.
 Author

N64-15768 British Hydromechanics Research Assn., Harlow Information Dept

SOME REFERENCES ON DIFFERENT ASPECTS OF LIP SEALS

Oct 1963 7 p 36 refs
 (BIB-15)

An annotated bibliography on different aspects of lip seals is presented.
 I. v. L.

N64-15799 Argonne National Lab., Ill.
TWO PHASE (GAS-LIQUID) SYSTEM: HEAT TRANSFER AND HYDRAULICS An Annotated Bibliography

Robert R. Kepple and Thomas V. Tung (Ill. U.) Jul. 1963 435 p refs
 (Contract W-31-109-eng-38)
 (ANL-6734)

In this annotated bibliography information is presented in the following areas: boiling phenomena; bubbling; condensation; evaporation; equations of state; interfacial characteristics; mass transfer across phase boundaries; measurement techniques; nuclear-reactor heat removal; and two-phase flow.
 C. L. W.

N64-15809 Army Missile Command, Huntsville, Ala. Redstone Scientific Information Center

TEKTITES: A BIBLIOGRAPHY

Charlotte F. Shenk 15 Jan. 1964 122 p refs
 (RSIC-107; AD-430350)

This bibliography consists of 771 references on tektites and some closely related subjects. Many entries are annotated, giving information about tektite origins, composition, discovery sites, ages, formation, and history. The material gathered is international in scope, covering the literature from the early 19th century through 1963. Titles and other bibliographical data generally appear in the languages of origin.
 Author

N64-15949 Library of Congress, Washington, D. C. Aerospace Information Div

ELECTROSTATIC ROCKET TECHNOLOGY. COMPREHENSIVE REPORT ON SOVIET PERIODICAL LITERATURE Report No. 1, Jan. 1958-Apr. 1963

10 Dec. 1963 75 p refs
 (AID P-63-121; AD-429317) OTS: \$7.60 ph, \$2.45 mf

Reviews are given of studies in the following areas: experiments with a laboratory model of an ion-propulsion motor; ion production, ion optics, and ion beam neutralization, charge exchange, and secondary emission. A laboratory model of an ion motor was used to study thrust generation by accelerating cesium ions produced through contact ionization of cesium vapor on a heated tungsten plate. Studies were conducted on the surface ionization of lithium, sodium, potassium, and rubidium and on ion sources for use in mass spectrometers. Several theoretical analyses of space-charge flow and focusing systems are presented, along with automatic space-charge flow calculation and trajectographs. Studies are also included that deal with the theoretical and experimental determination of plasma oscillations arising in the neutralization of ion beams; charge exchange between alkali-metal ions and atoms or various gases; and secondary emission from metal surfaces bombarded with ion beams.
 C. L. W.

N64-15978 Lockheed Missiles and Space Co., Sunnyvale, Calif.

LASER TECHNOLOGY: AN ANNOTATED BIBLIOGRAPHY [JAN. 1962-FEB. 1963]

Helen B. McCormick, comp. Feb. 1963 98 p refs
 (SB-63-23; Rept. 5-73-63-6)

Advances in laser technology are reported against the background of comprehensive treatment of laser characteristics and action, new materials evidencing laser action, laser applications and problems, and the continuing research that is making such applications more practicable. Subject coverage is selective and representative rather than complete. The inclusion of recent bibliographies and evaluations (Section I: Bibliographies, and Section II: Laser Action and Applications) provides the reader the opportunity for more detailed background and perspective.
 Author

N64-15979 Lockheed Missiles and Space Co., Sunnyvale, Calif.
IRON PLATING: AN ANNOTATED BIBLIOGRAPHY [1940-JUN. 1963]

Jack B. Goldmann, comp. Jul 1963 95 p refs
 (Contract N0W-62-0363)
 (SB-63-55, Rept 3-26-63-5)

This annotated bibliography covers mainly the electroplating of iron, and of the alloy, iron-nickel. Also, production methods for the deposition of heavy layers of iron and iron-nickel on stainless steel were emphasized. Printed sources were examined for the years 1940 through June 1963.

Author

N64-15980 Lockheed Missiles and Space Co., Sunnyvale, Calif.

FUSION WELDING OF ALUMINUM: AN ANNOTATED BIBLIOGRAPHY [1962-JUN. 1963]

Helen B. McCormick and Peter R. Stromer, comps. Jul. 1963 27 p refs
 (SB-63-56, Rept 8-30-63-2)

This bibliography (62 refs.) has been compiled on the fusion welding of aluminum alloys, with emphasis on references reporting the latest advances in the Tunsten-Inert-Gas (TIG) process using either alternating current or direct current straight polarity. Entries are arranged alphabetically by senior personal author or by journal article title when no author is given. A subject index is included.

Author

N64-15981 Lockheed Missiles and Space Co., Sunnyvale, Calif.

WIND WAVES AND SEA SLOPE MEASUREMENT: AN ANNOTATED BIBLIOGRAPHY [1948-JUN. 1963]

Peter R. Stromer, comp. Jul 1963 61 p refs
 (SRB-63-4, Rept 6-90-63-78)

This bibliography cites 134 references on the related subjects of wind waves and sea slope measurement. Oceanographic measurements reported in the bibliography have emphasized optical techniques and light transmission in sea water. The period of literature coverage is from 1948 through June 1963. A subject index is included.

Author

N64-16095 Library of Congress, Washington, D.C.
BIBLIOGRAPHY OF BIOREGENERATING SYSTEMS FOR EXTRATERRESTRIAL HABITATION. Technical Documentary Report [15 Aug. 1962-15 Sep. 1963]

Paul E. Spiegler. Wright-Patterson AFB, Ohio, Biomedical Lab., Nov. 1963 99 p refs
 (Contract AF 33(657)-62-397)
 (AMRL-TDR-63-121, AD-430814) OTS: \$2.50

This bibliography is a representative sampling of the world's literature covering the years 1959 to the present concerning the various aspects of extraterrestrial habitation. The 440 references deal with both the physiology and ecology of bioregenerating systems for space travel and the specific human requirements for extraterrestrial habitation. The section on the biology of bioregenerating systems contains papers on waste management and reutilization, gas-exchange mechanisms using different plants, culture techniques for producing food by utilizing tissues or plants, edibility of algae and various animals, toxicological aspects of waste and materials of construction, and environmental conditions on the moon. Papers dealing with specific human requirements include those on nutrition, food technology, and various topics of personal hygiene and sanitation.

Author

N64-16099 Library of Congress, Washington, D.C. Aerospace Information Div.
PHENOMENA IN THE UPPER ATMOSPHERE. COMPILATION OF ABSTRACTS FROM SOVIET-BLOC LITERATURE

12 Feb. 1964 17 p refs

(Rept. 39, AID-P-64-10, AD-430822) OTS: \$1.60 ph. \$0.80 mf

Information is compiled concerning ionospheric electron concentrations, solar radiations and the ionosphere, the Van Allen belt and cosmic rays, and telluric currents. C.L.W.

N64-16555 International Union of Pure and Applied Chemistry, Basle (Switzerland) Commission on High Temperatures and Refractories

BIBLIOGRAPHY ON THE HIGH TEMPERATURE CHEMISTRY AND PHYSICS OF GASES AND GAS-CONDENSED PHASE REACTIONS

L. Brewer, comp. (Calif. U.) 31 Dec 1963 29 p refs
 (Rept. 10)

The articles presented in this bibliography are in the following categories: (1) spectroscopy of interest to high-temperature chemistry, and (2) gas and gas-condensed phase reactions.

I.v.L.

N64-16582 California U., Berkeley Coll. of Engineering
INITIAL BIBLIOGRAPHY ON "CHARACTERIZATION OF PARTICLES AND ASSEMBLIES OF PARTICLES" [1958-JUL. 1963]

A. L. Mular and V. A. Mee, comp. *In its* Critical Compilation of Ceram. Forming Methods Jan. 1964 p 91-211 refs (See N64-16576 08-17)

Topics discussed in this bibliography include powder particle preparation, properties of particles, properties of assemblies of particles, mixing and blending, granulation, agglomeration, sintering, and general characterization of particles.

E.W.

N64-16583 California U., Berkeley Coll. of Engineering
INITIAL BIBLIOGRAPHY ON "FORMING OF CERAMICS" [1955-JUL. 1963]

A. G. Pincus, R. E. Rose, and V. A. Mee, comp. *In its* Critical Compilation of Ceram. Forming Methods Jan. 1964 p 212-412 refs (See N64-16576 08-17)

Forming processes included are cold forming from dry powders, pastes, and suspensions, polymer- and chemically assisted forming, high energy rate forming, forming by melting and casting of nonglassy ceramics in bulk and by hot deposition, and forming of glass, specific shapes, porous bodies, and composites. Also included are theoretical bases of forming, preparations for forming, hot forming, vapor forming, forming from films, filaments, or whiskers, electroforming, general treatments of forming methods, secondary forming, impregnation and infiltration, assembling and joining, products and parts, ceramics for aerospace applications, and radomes. E.W.

N64-16985 General Dynamics/Astronautics, San Diego, Calif.

WS 107A-1. BIBLIOGRAPHY OF RESEARCH AND DEVELOPMENT REPORTS FOR 1963

R. C. Spalding. Feb. 1964 281 p refs
 (GDA-ACW64-002, AD-430535)

This bibliography is arranged by report number and by subject. Among the categories included are: (1) aerodynamics; (2) flight-test reports; (3) project detail specifications; (4) operating and maintenance manuals; (5) installation and instruction manuals; (6) thermodynamics, heat transfer, anti-icing analysis, cabin pressurization; (7) electronics, radio, guidance, servomechanisms, instruments, instrumentation; (8) preliminary design reports, brochures, pictorial drawings; (9) progress reports, summaries, visits, investigations, status reports; (10) stress analysis, static and structure tests; and (11) weight and balance reports.

I.v.L.

N64-17265 International Union of Pure and Applied Chemistry, Basle (Switzerland) Commission on High Temperatures and Refractories

BIBLIOGRAPHY ON THE HIGH TEMPERATURE CHEMISTRY AND PHYSICS OF MATERIALS IN THE CONDENSED STATE, OCTOBER, NOVEMBER, DECEMBER 1963, VOLUME 1963, NUMBER 4

J. J. Diamond (Natl. Bur. of Standards), ed. [1963] 49 p refs

A bibliography pertinent to the following categories, is presented: (1) devices for achieving temperatures above 1,000° C; (2) devices for measuring and controlling temperatures above 1,500° C; (3) devices for physical measurements at temperatures above 1,000° C; (4) the properties, at temperatures below and above 1,000° C, of metallic, nonmetallic, and mixed materials that melt above 1,500° C; (5) the properties, at temperatures above 1,000° C, of metallic and nonmetallic materials that melt below 1,500° C; (6) phase equilibria; and (7) reactions at temperatures above 1,000° C. I.v.L.

N64-17276 North American Aviation, Inc., Downey, Calif Space and Information Systems Div

AEROSPACE CORROSION AND MOISTURE PROBLEMS: A REVIEW OF THE RESEARCH REPORTS [1960-1964]

J. R. Linger 20 Jan 1964 268 p 634 refs (SID-64-II)

This report is a bibliography of research reports on corrosion and moisture problems in the Aerospace industry published from 1960 to date. Foreign language references are included. Author

N64-17331 Lockheed Missiles and Space Co., Sunnyvale, Calif.

THE METEOROID HAZARD TO SPACE VEHICLES: AN ANNOTATED BIBLIOGRAPHY

Eugene E. Graziano and Helen B. McCormick, comp. Aug. 1963 31 p refs (Contract AF 04(647)-787) (SB-63-58; Rept. 3-56-63-1; AD-431973)

This bibliography consists of 78 references to published materials on the meteoroid hazard to space vehicles in the near-earth environment. Author

N64-17490 Federal Aviation Agency, Washington, D.C. Library Services Div.

AIRPORTS AND HELIPORTS: PLANNING, MANAGEMENT AND OPERATIONS, SAFETY, SELECTED REFERENCES

Dec. 1963 96 p refs (Its Bibliog. List No. 10)

This bibliography is a partially annotated compilation of selected references with international coverage from 1959 through 1963. I.v.L.

N64-17491 Electronic Associates, Inc., Princeton, N.J. Education and Training Group

BIBLIOGRAPHY OF BIO-ENGINEERING MODELS AND MODEL MATCHING METHODS FOR ANALOG AND HYBRID COMPUTERS

A. Ben Clymer 17 Jun. 1963 8 p 132 refs

This bibliography includes the following topics: (1) human operator and general model-matching methods; (2) homeostatic systems; (3) biochemical kinetic and compartmental systems; and (4) neural systems. R.T.K.

N64-17519 Library of Congress, Washington, D.C. Aerospace Information Div.

SUPERSONIC AND HYPERSONIC FLOW Annotated Bibliography of Soviet Literature

21 Jan. 1964 93 p 307 refs

(AID-B-64-3, AD-431286) OTS: \$8.60 ph, \$2.99 mf

This report is divided into three main sections: Aerodynamics, Gasdynamics, and General Flow Phenomena. An attempt is made in the first section to cover dynamic phenomena associated with high-velocity flow of gases over bodies, including rarefied and free-molecular flow. The second section covers the problems associated with internal flow, e.g., flow in nozzles, wind tunnels, and shock tubes. Similarity concepts are also included in this section. The third section deals with general flow phenomena at supersonic and hypersonic velocities. Author

N64-17633 Army Cold Regions Research and Engineering Lab., Hanover, N.H.

BIBLIOGRAPHY ON SNOW, ICE AND PERMAFROST; WITH ABSTRACTS, VOLUME XVII

Frank M. Marson et al Jun. 1963 274 p refs (CRREL-12, Vol. 17; AD-432809)

This annotated bibliography provides current and comprehensive coverage of scientific information, both basic and applied, about living and operating in the polar and subpolar regions. The subjects covered vary from ablation to whiteout, and include such diverse topics as avalanche forecasting, ice crystallography, snow mechanics, frost effects, tunneling and excavations, development of trafficable surfaces, permafrost construction, and various phases of heat and mass budgets. R.T.K.

1963

IAA ENTRIES

A63-10583

ANNOTATED BIBLIOGRAPHY OF SPACE SCIENCE AND TECHNOLOGY WITH AN ASTRONOMICAL SUPPLEMENT.
Frederick I. Ordway, III (NASA, George C. Marshall Space Flight Center, Huntsville, Ala.)
Washington, D. C.; Arfor Publications, Third edition, 1962. 77 p.
\$2.95.

Compilation of what is believed to be all significant English-language titles since Lasser's "Conquest of Space" (1931). The bibliography is organized according to year of publication, a feature that not only leads the reader directly to the most recent works, but also emphasizes the growth of missile and astronautical literature in the last three decades. Foreign-language titles are excluded from this edition, with the exception of multilanguage proceedings of key international astronautical conferences. However, many significant French, German, and Soviet titles which have been translated into English are included. As a supplement to the main bibliography, a listing is given of astronomical books that deal with the immediate objectives of space flight and contribute heavily to astronautical progress. Over 300 titles, in the main bibliography, and some 170 more in the supplement are included.

A63-11367

RECENT LITERATURE ON THE IONOSPHERE.

Geza Thuronyi.

Meteorological and Geostrophysical Abstracts, vol. 13, Oct. 1962, p. 3003-3062.

Compilation of 231 abstracts on the ionosphere. Two indexes are given - subject and geographic.

A63-12861

CONTRIBUȚIE LA BIBLIOGRAFIA TEMEI CAVITAȚIA [CONTRIBUTION TO THE BIBLIOGRAPHY ON CAVITATION].

Maria Deleanu and Ida Pava.

Studii și Cercetări Științe Tencnice, vol. 9, no. 1-2, 1962, p. 171-200. 621 refs. In Rumanian, with summaries in French and Russian.

Extensive bibliography on cavitation arranged alphabetically by author. A thematic index is included, in which the references are listed in numerical order within specific subject groups.

A63-13104

BIBLIOGRAFIA SUI SISTEMI AVANZATI DI PROPULSIONE [BIBLIOGRAPHY ON ADVANCED SYSTEMS OF PROPULSION].

Rodolfo Monti and Luigi G. Napolitano (Università di Napoli, Istituto di Aeronautica, Naples, Italy).

Missili, vol. 4, Oct. 1962, p. 37-52. In Italian.

Presentation of three bibliographies, containing a total of 437 references, on plasma and ionic propulsion and on associated fundamental problems. A brief discussion of energy sources, conversion, and utilization precedes the bibliographies.

A63-13667

STATE OF THE ART OF PURE FLUID SYSTEMS.

R. E. Bowles (Bowles Engineering, Corp., Silver Spring, Md.)

(American Society of Mechanical Engineers, Hydraulic and Automatic Control Divisions, Winter Annual Meeting and Symposium on Fluid Jet Control Devices, New York, N.Y., Nov. 28, 1962.)

IN: Fluid Jet Control Devices. New York, American Society of Mechanical Engineers, 1962, p. 7-22. 348 refs.

Price of entire volume (90 p.): \$7.50.

Presentation of a brief discussion and an extensive bibliography on the significant progress made in all phases of pure-fluid systems. The following topics are covered: (1) hardware; (2) variables, such as power level, supply-pressure level, Reynolds number, power-nozzle width, gain, and frequency; (3) problem areas, including sealing, system power consumption, aspect ratio, coupling, interface, creep, definition of acceptable

tolerances, SNR, and drift. (4) instrumentation, and (5) manufacturing. In addition, an account is given of the several flow visualization techniques, such as the water table, the smoke tunnel, hydrogen-bubble technique, interferometers, fiber-optic monitor, hot-wire anemometry, and pressure transducers.

A63-13971

BIBLIOGRAPHY ON HUMIDITY MEASUREMENT INSTRUMENTS.
Evelyn Sinha.

Meteorological and Geostrophysical Abstracts, vol. 13, Dec. 1962, p. 3622-3717.

Compilation of 467 abstracts for a time period from 1665-1962 on material relating to the humidity or moisture measurement under natural conditions. The abstracts are arranged in chronological order, and a subject index is included.

A63-13972

ANNOTATED BIBLIOGRAPHY ON SPECIAL SOLAR AND RELATED TERRESTRIAL EVENTS.

Elemer Kiss.

Meteorological and Geostrophysical Abstracts, vol. 13, Nov. 1962, p. 3314-3393. 340 refs.

Compilation of 340 abstracts on separate solar events (flare, eruptions, etc.) which can be identified closely in time, and their effects on the weather, ionosphere, geomagnetic field, cosmic rays, radio wave propagation, and polar cap absorption. The period covered is 1943-1961. In addition, subject and geographical indices are given.

A63-14195

HEAT TRANSFER BIBLIOGRAPHY.

E. R. G. Eckert, E. M. Sparrow, W. E. Ibele, and R. J. Goldstein (University of Minnesota, Dept. of Mechanical Engineering, Heat Transfer Laboratory, Minneapolis, Minn.)

International Journal of Heat and Mass Transfer, vol. 6, Mar. 1963, p. 231-242. 385 refs.

Listing of approximately 400 references on heat transfer. The bibliography is divided into the following categories: applications, books, boundary-layer flow, channel flow, change of phase, conduction, flow with separated regions, liquid metals, low-density heat transfer, MHD, measurement techniques, natural convection, radiation, rotating surfaces, thermodynamic and transport properties, transfer mechanisms, and transpiration and mass-transfer cooling.

A63-14196

HEAT TRANSFER BIBLIOGRAPHY-JAPANESE WORKS.

Takashi Sato (Kyoto University, Dept. of Mechanical Engineering, Kyoto, Japan).

International Journal of Heat and Mass Transfer, vol. 6, Mar. 1963, p. 243, 244. 42 refs.

Listing of 42 recent (1962) Japanese references on heat transfer. The following aspects are included: applications, boundary layers, change of phase, natural convection, and radiation.

A63-14563

RESOURCE LETTER SO-1 ON THE KINEMATICS AND DYNAMICS OF SATELLITE ORBITS.

Leon Blitzer (University of Arizona, Tucson, Ariz.)

American Journal of Physics, vol. 31, Apr. 1963, p. 233-236.

Presentation of a bibliography intended to guide college physics teachers to some of the literature and other teaching aids that may help them improve course contents. The list includes books on: (1) introductory and advanced orbit mechanics; (2) orbits of artificial satellites; (3) satellites and space; (4) dynamics of satellite orbits, including oblateness perturbations, drag perturbations, and secondary effects; and (5) teachers' aids, including problem sets and films.

A63-15587

HEAT TRANSFER BIBLIOGRAPHY - RUSSIAN WORKS.

A. V. Luikov (Academy of Sciences, Institute of Energetics, Minsk, Belorussian SSR).

International Journal of Heat and Mass Transfer, vol. 6, Apr. 1963, p. 309-323.

Bibliography of 335 recent (1961-1962) Soviet journal articles and books on various aspects of heat transfer. Covered are (1) analytical methods for solving heat- and mass-transfer problems; (2) thermophysical properties of various materials, heat agents, and the methods of their determination; (3) physics of high-temperature processes and magnetohydrodynamics; (4) heat and mass transfer with phase conversions; (5) heat and mass transfer with chemical conversions and combustion; (6) general heat-transfer problems; and (7) transfers in drying processes and in nuclear reactors.

A63-17251

ADVANCES IN MASS SPECTROMETRY. VOL. II.

Edited by R. M. Elliott (Associated Electrical Industries, Ltd., Manchester, England).

(Mass Spectrometry Conference, 2nd, Proceedings, Oxford, England, Sept. 1961.)

Oxford, England, Pergamon Press, Ltd., 1963. 628 p. \$20.00.

Conference sponsored by American Society for Testing and Materials, Committee E-14, and Institute of Petroleum Hydrocarbon Research Group, Mass Spectrometry Panel.

Collection of papers dealing with recent developments in the instrumentation and applications of mass-spectrometric analysis. The papers do not necessarily presuppose knowledge of mass spectrometry, and many of them are concerned with physical, organic, or inorganic chemistry. New installations are described, including the large mass spectrograph at the Max Planck Institute (Mainz, West Germany), the two-stage mass spectrometers (Aldermaston, England), and the Argonne National Laboratory 100-in.-radius, double-focusing mass spectrometer. An extended bibliography on mass spectrometry (1,066 references) is included. The papers are individually abstracted and indexed in this issue.

A63-17282

BIBLIOGRAPHY ON MASS SPECTROMETRY.

Associated Electrical Industries, Ltd., Research Lab., Manchester, England.

(Mass Spectrometry Conference, 2nd, Proceedings, Oxford, England, Sept. 1961.)

IN: Advances in Mass Spectrometry. Vol. II. Oxford, England, Pergamon Press, Ltd., 1963, p. 561-610.

Extensive bibliography (over 1000 references), compiled from some 550 journals, concerning the design and application of mass spectrometers. The period covered extends from January 1958 to December 1960. References are grouped in the following sections, in chronological order within each section: (1) instrument design, including instruments, components, and accessories; (2) operating techniques; (3) applications to isotopic problems, including isotopic analysis of solids, determination of atomic masses, and isotopic analysis of gases; (4) applications to organic chemistry; (5) ionization and dissociation of molecules; (6) general applications in engineering, physics, and physical chemistry; and (7) applications to solids (other than isotopic problems), including spark-source and thermodynamic studies.

A63-18563

SOLAR SYSTEM SCIENCE: 1961 LITERATURE SURVEY; CUMULATIVE AUTHOR-INSTITUTION INDEX.

Edna O'Connell (RAND Corp., Santa Monica, Calif.).

Icarus, vol. 1, Apr. 1963, p. 489-514.

NASA-USAF-supported research.

Index of the 1,051 authors (with their affiliations) represented in the 965-item, four-part 1961 literature survey on the solar system. Topics covered by these authors in the literature survey include solar physics, auroras, cosmic-ray intensity, geomagnetic disturbances, radiation belts, ionospheric phenomena, comets, meteors, atmospheric physics, planetary geodesy and geology, meteorites, motion of artificial satellites, cosmogony, and planetary biology.

A63-18770

SUPPLEMENTARY BIBLIOGRAPHY ON THE USE OF SATELLITES IN METEOROLOGY.

Elemer Kiss.

Meteorological and Geostrophysical Abstracts, vol. 14, Mar. 1963, p. 870-963.

Bibliography of 283 annotated items concerned with meteorological data obtained by U.S. and Soviet satellites from 1961-1962. Topics covered include atmospheric density, pressure, temperature,

and cloud formations, storms, ice, and snow cover observations. Data on the satellites, the instrumentation carried, and the observational methods employed are also included. Books, monographs, NASA reports, congresses, and conferences, as well as journal articles, are listed.

A63-19948

ATMOSPHERIC CHEMISTRY.

James P. Lodge, Jr. (National Center for Atmospheric Research, Boulder, Colo.) and Joshua Z. Holland (U.S. Atomic Energy Commission, Washington, D.C.).

(International Union of Geodesy and Geophysics, Thirteenth General Assembly, United States National Report, 1960-1963.)

American Geophysical Union, Transactions, vol. 44, June 1963, p. 365-369. 91 refs.

Summary review of recent advances in atmospheric chemistry, emphasizing those in radiochemistry. Noted are significant contributions to microanalytical techniques, the atmospheric chemistry of nonradioactive species, and the discovery of the presence in atmospheric methane of substantial amounts of tritium. Studies of the slow-transfer processes affecting stratospheric debris from atomic tests are briefly discussed. Included is an extensive bibliography.

A63-20175

HEAT TRANSFER BIBLIOGRAPHY.

E. R. G. Eckert, E. M. Sparrow, W. E. Ibele, and R. J. Goldstein (University of Minnesota, Heat Transfer Laboratory, Dept. of Mechanical Engineering, Minneapolis, Minn.).

International Journal of Heat and Mass Transfer, vol. 6, July 1963, p. 621-646.

Listing of more than 700 articles dealing with the various problems of heat transfer. The listing is divided into 16 groups: applications, books, boundary-layer flow, channel flow, change of phase, conduction, low density, liquid metals, magnetohydrodynamics, measurement techniques, natural convection, radiation, rotating surfaces, thermodynamic and transport properties, transfer mechanisms, and combined heat and mass transfer.

A63-20769

THE REFLECTION AND TRANSMISSION OF INFRARED MATERIALS. II - BIBLIOGRAPHY.

Donald E. McCarthy (Beckman Instruments, Inc., Fullerton, Calif.). Applied Optics, vol. 2, June 1963, p. 596-603.

Presentation of a list of 327 articles containing data on the IR reflection and transmission of optical materials. Index of refraction papers is also included. The papers are listed according to material and are arranged alphabetically by the first author in each section. The materials are NaCl, KBr, CeBr, CeI, SiO₂, LiF, CaF₂, sapphire, As₂S₃, AgCl, thallium-bromide iodide (KRS5), Irtran 1 (pressed sintered magnesium fluoride), Irtran 2 (pressed sintered zinc sulfide), Si, and Ge.

A63-21461

A BIBLIOGRAPHY ON MAGNETOSTRICTIVE DELAY LINES.

Samuel Goldstein (Computer Control Co., Framingham, Mass.).

IEEE Transactions on Ultrasonics Engineering, vol. UE-10,

July 1963, p. 58-71.

Annotated bibliography gathered from a search of the open literature for material relating directly, in whole or in part, to the theory, design, fabrication, and application of magnetostrictive delay lines. Listed alphabetically by author are the 134 relevant items (mainly periodical articles and conference papers) that have been uncovered.

A63-21614

SOLAR SYSTEM SCIENCE: 1962 LITERATURE SURVEY. I.

Edna O'Connell (RAND Corp., Santa Monica, Calif.).

Icarus, vol. 2, June 1963, p. 88-108.

NASA-USAF-supported research.

Bibliography of 461 references on solar system science consisting of 452 entries. The following topics are covered: atmospheric physics; cosmogony; interplanetary physics, including meteor phenomena; planetary biology, geodesy, geology, and physics; solar system dynamics; and solar terrestrial relations, including auroras, cosmic rays, gegenschein, and the radiation belts.

A63-22500**A LITERATURE SURVEY OF BIOCONTROL SYSTEMS.**

E. I. Jury and T. Pavlidis (University of California, Dept. of Electrical Engineering and Electronics Research Laboratory, Berkeley, Calif.).

IEEE Transactions on Automatic Control, vol. AC-8, July 1963,

p. 210-217. 16 refs.

Grant Nos. AF-AFOSR-117-63 and AF-AFOSR-62-70.

Discussion of important results of previous investigations in the relatively new field of biocontrol systems. The material is classified into the following topics: (1) general human operator dynamics, (2) neuromuscular systems, (3) eye dynamics, (4) respiratory and circulatory systems, (5) biological process control, and (6) central nervous systems and brain. The survey has the dual purpose of stimulating the control engineer's interest in biocontrol systems, and of indicating to the physiologist the vast system theory that can be used for more profound understanding of biological processes. Included is an extensive bibliography including neuromuscular systems, respiratory and circulatory systems, and biological process control.

A63-22556**SEMICONDUCTOR AND SOLID-STATE BIBLIOGRAPHY.**

Semiconductor Products, vol. 6, Sept. 1963, p. 34-37.

Presentation of a bibliography of studies (published Feb.-Apr. 1963) concerning semiconductor and solid-state phenomena. A condensed summary of each article is included.

A63-23035**BOOKS ON RADIO ENGINEERING AND ELECTRONICS IN 1963**

[KNIGI PO RADIOTEKHNIKE I ELEKTRONIKE V 1963G.].

Radiotekhnika i Elektronika, vol. 8, May 1963, p. 886-920. In Russian.

Review and bibliography of more than 400 books, including monographs, textbooks, manuals, and popular scientific literature on radio engineering and electronics, scheduled for publication during 1963. The information presented includes brief annotations, approximate dates of publication, probable number of printings, and where applicable, the number of volumes.

A63-23511**BIBLIOGRAPHY: RADIO TELEMETRY TO SURVIVE HIGH ACCELERATIONS.**

P. L. Clemens (ARO, Inc., von Kármán Gas Dynamics Facility, Tullahoma, Tenn.).

IN: 1963 NATIONAL TELEMETERING CONFERENCE, PROCEEDINGS. Albuquerque, N.M., May 20-22, 1963. New York, Institute of Electrical and Electronics Engineers, 1963. 10 p.

Contract No. AF 40(600)-1000.

Compilation of writings relating to high acceleration radio telemetry developments. The order of listing is chronological by date of publication. In addition to the 31 papers on telemetry, 26 papers on packaging developments are included. Abstracts are presented for almost all the listings.

1964

IAA ENTRIES

A64-10087**HEAT TRANSFER BIBLIOGRAPHY.**

E. R. G. Eckert, E. M. Sparrow, W. E. Ibele, and R. J. Goldstein (Minnesota, University, Dept. of Mechanical Engineering, Heat Transfer Laboratory, Minneapolis, Minn.).

International Journal of Heat and Mass Transfer, vol. 6, Nov. 1963, p. 971-986.

Five hundred nineteen references to journal articles, reports, and books, classified as follows: applications, books, boundary-layer flow, channel flow, change of phase, combined heat and mass transfer, conduction, flow with separated regions, liquid metals, low density, magnetohydrodynamics, measurement techniques, natural convection, radiation, rotating surfaces, thermodynamic and transport properties and transfer mechanisms. Foreign literature is included.

A64-10917**NEW DEVELOPMENTS IN MASS TRANSFER.**

D. M. Himmelblau and K. B. Bischoff.

I & EC - Industrial and Engineering Chemistry, vol. 55, Oct. 1963, p. 50-57. 260 refs.

Review of mass transport fundamentals covering the period November 1960 to March 1963. It contains an extensive bibliography, and reviews accomplishments in the fields of molecular diffusion, turbulent diffusion and dispersion, general mixing processes in flow systems, interphase, mass transfer, and interfacial phenomena. Other recent work is covered in the fields of mass transfer in boundary layer flow, and of simultaneous mass and heat transfer.

A64-10918**LESS COMMON METALS FOR PROCESS EQUIPMENT.**

E. M. Sherwood.

I & EC - Industrial and Engineering Chemistry, vol. 55, Oct. 1963, p. 59-64. 104 refs.

Review of an extensive bibliography dealing with less common metals deserving consideration by the chemical industry as construction materials for special applications. The reviews cover the fields of applications of chemical plant service, aerospace, and superconducting alloys. It is stated that new research on fabrication techniques, alloy development, and protective coatings promises designers of process equipment many unexpected benefits.

A64-11095**BIBLIOGRAPHY ON HEAT AND MASS TRANSFER [BIBLIOGRAFIYA PO TEPLU - I MASSOOBMENU].**

R. A. Dolinskaia.

Inzhenerno-Fizicheskii Zhurnal, Sept. 1963, p. 127-137. In Russian.

Listing of 9 books and 255 periodical articles. These cover (1) analytical methods of calculation, (2) thermodynamics, (3) experimental methods, (4) processes in phase transitions, (5) chemical transitions, (6) processes occurring at ultrahigh velocities, (7) desiccation processes, (8) thermophysical and thermodynamic characteristics of materials and heat carriers and methods for the determination of these characteristics, (9) high-temperature physics and magnetohydrodynamics, (10) nuclear reactor processes, and (11) apparatus, equipment, and procedures. Only Soviet sources are covered, with the exception of several translations.

A64-11798**BIBLIOGRAPHY OF PONTRYAGIN'S MAXIMUM PRINCIPLE.**

A. T. Fuller (Cambridge, University, Dept. of Engineering, Cambridge, England).

Journal of Electronics and Control, vol. 15, Nov. 1963, p. 513-517.

Fifty-four papers and books concerning Pontryagin's maximum principle and its application to optimum control problems. Included are items published from 1956 to 1961 in English, in Russian, and in translation from the Russian.

A64-12173**BIBLIOGRAPHY.**

Telecommunications and Radio Engineering. Part 1 - Telecommunications, Apr. 1963, p. 84-90. Translation.

List of 106 references published in 1962 relating to various aspects of telecommunications. The works, most of which are from the U.S. and the USSR, deal with information theory and theoretical radio engineering, radio communication and data transmission systems, and space communications, radio wave propagation, antennas, transmission lines and waveguides, communications systems and components, television, semiconductor devices and circuits, and parametric amplifiers.

A64-12390**SEMICONDUCTOR AND SOLID-STATE BIBLIOGRAPHY.**

Semiconductor Products and Solid State Technology, vol. 6, Dec. 1963, p. 45-49.

Compilation of a semiconductor and solid-state bibliography listing over 120 sources from American and foreign journals from April to June 1963. Listed are the title, author, publication, and a condensed summary of the paper.

A64-13703

BIBLIOGRAPHY ON HEAT AND MASS TRANSFER [BIBLIOGRAFIJA PO TEPLU- I MASSOOBMENU].

R. A. Dolinskaia.

Inzhenerno-Fizicheskii Zhurnal, vol. 6, Dec. 1963, p. 127-134. In Russian.

Comprehensive bibliography on Soviet heat and mass transfer research. Listed are 7 books, 9 articles dealing with general problems, 33 articles on analytical methods for heat and mass transfer calculation, 4 articles on the thermodynamics of heat and mass transfer processes, 17 papers dealing with experimental methods, 67 articles dealing with phase-transformation processes, 1 reference concerning chemical-transformation processes, 6 papers concerning processes at supersonic velocities, 24 articles on the thermophysical and thermodynamic characteristics of various materials and heat-transfer agents, as well as methods for their determination, 23 articles dealing with the physics of high-temperature processes in magnetohydrodynamics, 3 articles concerning processes in nuclear reactors, and 15 papers describing experimental heat-transfer equipment.

A64-14465

SOLAR SYSTEM SCIENCE: 1962 LITERATURE SURVEY. III.

BOOK NOTES: A SELECTED LIST.

Edna O'Connell (RAND Corp., Santa Monica, Calif.).

Icarus, vol. 2, Nov. 1963, p. 351-358.

USAF-NASA-supported research.

An annotated list of 35 books.

A64-14575

REFERENCES TO CONTEMPORARY PAPERS ON ACOUSTICS.

Frederick E. White (Boston College, Dept. of Physics, Chestnut Hill, Mass.) and Earl D. Schubert (Indiana University, Speech and Hearing Clinic, Bloomington, Ind.).

Acoustical Society of America, Journal, vol. 36, Jan. 1964, p. 226-239. 544 refs.

Bibliography of papers, especially those published in 1963, concerning studies in various areas of acoustics. The papers are categorized in the following areas: architectural acoustics; physiological and psychological acoustics; acoustic instruments and apparatus; music and musical instruments; noise and noise control; speech communications; ultrasonics; radiation and scattering; mechanical vibration and shock; underwater sound; aeroacoustics and macrosonics; acoustic signal processing; and bioacoustics.

A64-14706

SELECTED REFERENCES ON PERT AND RELATED TECHNIQUES.

B. L. Fry (North American Aviation, Inc., Atomics International Div., Management Systems and Evaluation, Canoga Park, Calif.).

(RAND Corp., Memorandum RM-3074-PR, Feb. 1963.)

IEEE Transactions on Engineering Management, vol. EM-10, Sept. 1963, p. 150, 151.

Bibliography of 50 items selected to demonstrate the scope of material covered in studies of the network-type management control systems. The documents are organized by author, title, author's organization, chronology, and a file number. The bibliography comprises two listings, one indexed by author and one indexed by title.

A64-15063

HEAT TRANSFER BIBLIOGRAPHY.

E. R. G. Eckert, E. M. Sparrow, W. E. Ibele, and R. J. Goldstein (Minnesota, University, Dept. of Mechanical Engineering, Heat Transfer Laboratory, Minneapolis, Minn.).

International Journal of Heat and Mass Transfer, vol. 7, Feb. 1964, p. 257-265.

Alphabetical listing of 275 references grouped under the following categories: boundary layer flow, change of phase, channel flow, conduction, flow with separated regions, heat and mass transfer, liquid metals, low density, magnetohydrodynamics, measurement techniques, natural convection, packed and fluidized beds, radiation, rotating surfaces, thermodynamic and transport properties, and transfer mechanisms.

A64-15064

HEAT TRANSFER BIBLIOGRAPHY - JAPANESE WORKS.

Takashi Satō (Kyoto University, Dept. of Mechanical Engineering, Kyoto, Japan).

International Journal of Heat and Mass Transfer, vol. 7, Feb. 1964, p. 267, 268.

Compilation of 37 references arranged alphabetically under the following subjects: application and outlook, channel flow, change of phase, conduction, flow with separated regions, measurement techniques, natural convection, properties, radiation, and transpiration and mass transfer.

A64-15773

BOOKS ON RADIO ENGINEERING AND ELECTRONICS IN 1963.

(*Radiotekhnika i Elektronika*, vol. 8, May 1963, p. 886-920.)

Radio Engineering and Electronic Physics, vol. 8, May 1963, p. 896-934. Translation.

[For abstract see Accession no. A63-23035 21-09]

A64-16092

REFERENCES TO CONTEMPORARY PAPERS ON ACOUSTICS.

Frederick E. White (Boston College, Dept. of Physics, Chestnut Hill, Mass.) and Earl D. Schubert (Indiana University, Speech and Hearing Clinic, Bloomington, Ind.).

Acoustical Society of America, Journal, vol. 36, Mar. 1964, p. 614-630.

Broad review of literature on acoustics including such aspects as the ear and hearing, acoustical instruments and apparatus, noise and noise control, speech communication, ultrasonics, acoustic radiation, mechanical vibration and shock, macrosonics, acoustic signal processing, and bioacoustics.

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